

# SUPPLEMENT.

# The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

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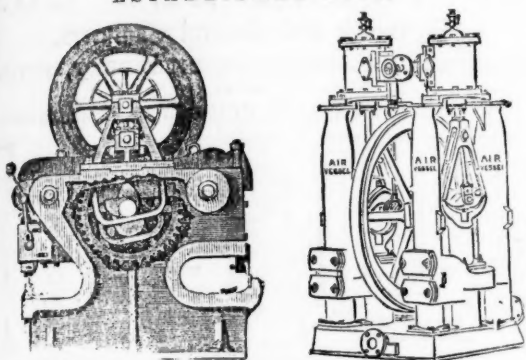
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No. 2074.—Vol. XLV.

LONDON, SATURDAY, MAY 22, 1875.

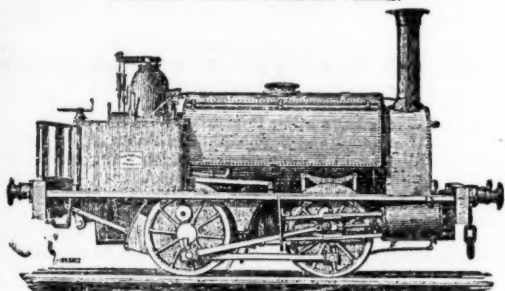
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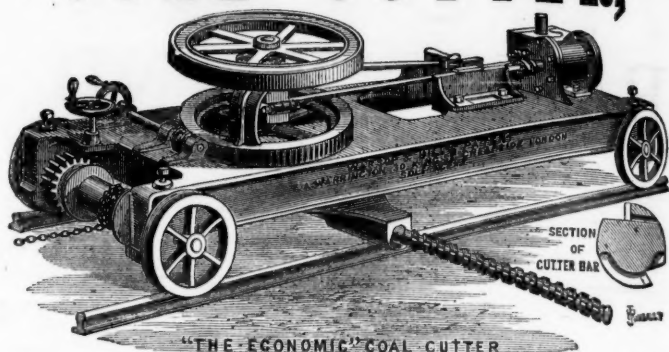
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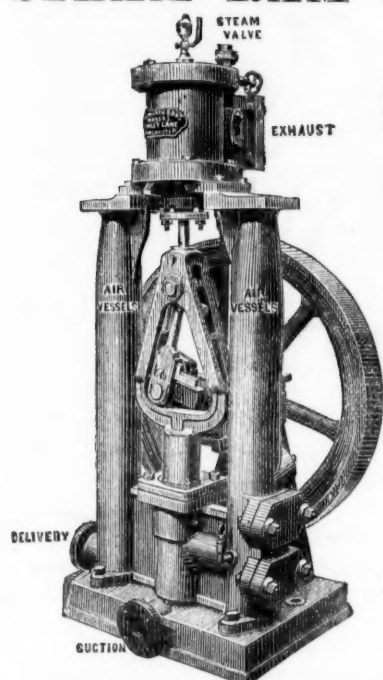
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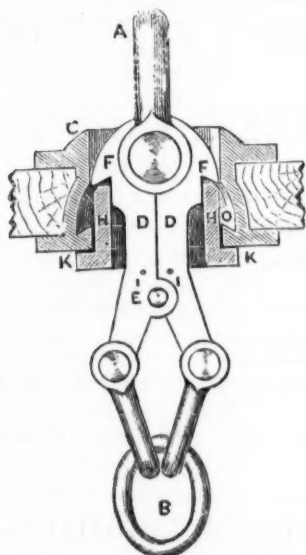
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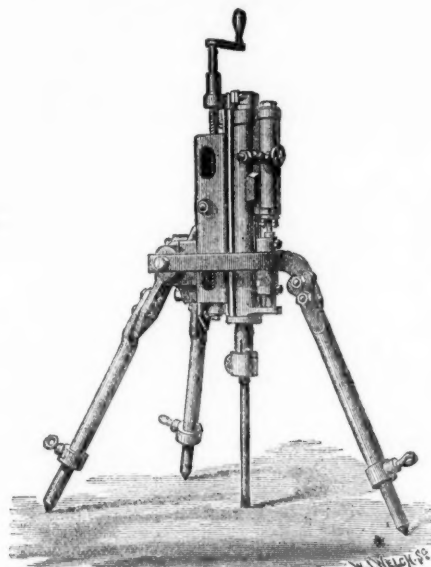
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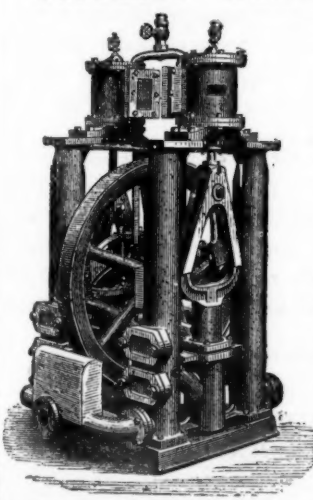
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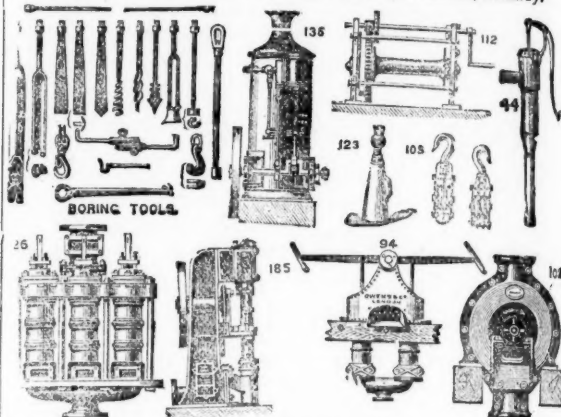
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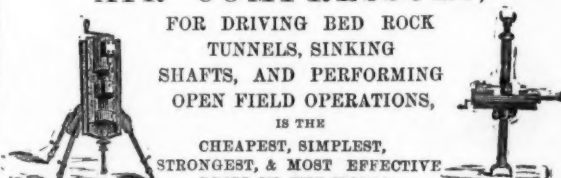
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BEST MANNER of APPLYING IT. For many years it has been, to a great  
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nature of most streams in these countries, having abundance of water during the  
winter half-year, and very little in the dry season. No kind of wheel hitherto  
known was able to give the proper proportion of power from the smaller quan-  
tities of water, so that it became the practice very generally to use steam entirely  
during the summer half of the year, letting the water go to waste. This is now  
completely prevented, and the full available power can be obtained from a stream  
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**Mac Adam's Variable Turbine.**

This wheel (which is now largely in use in England, Scotland, and Ireland) is  
the only one yet invented which gives proportionate power from both large and  
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yet work with equal efficiency through all variations of quantity down to a fifth,  
or even less if required. It is easily coupled to a steam-engine, and, in this way,  
always assists it by whatever amount of power the water is capable of giving, and,  
therefore, saves so much fuel.

This Turbine is applicable to all heights of fall. It works immersed in the fall-  
water, so that no part of the fall is lost, and the motion of the wheel is not affected  
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References to places where it is at work will be given on application to the  
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ENGINEERS, BELFAST.



## Original Correspondence.

## COAL-CUTTING MACHINERY.

SIR,—I feel that an apology is due from me after the intimation given last week that it was not my intention to carry the correspondence with Mr. Bass any further, but since I wrote that letter new correspondents have appeared, whose communications are important and entitled to every consideration. And, moreover, Mr. Bass has unfortunately raised an offensive personal question touching the character of my witnesses, and has also made statements as to the cost at which coal can be cut by his machinery which are so preposterous that I feel it necessary, in the interests of those engaged in the coal trade, that these statements should be corrected, and I am induced *once more* to trouble you. I am, of course, bound to my engagement to meet Mr. Bass in a working contest at the New Market Colliery, if he gives me the opportunity.

Some of the accounts given by Mr. Bass of the quantity of work done by his machine were so surprising that I thought it desirable to have enquiry made, and I requested two engineers of unimpeachable reputation to visit the New Market Colliery and carefully enquire into the matter at that pit, and report the results in writing to me. This was done, and I furnished you with a fair and conscientious digest of their report, and I am perfectly confident every-thing was done by them with truthfulness and honour, and their individual characters are above suspicion. But, because their enquiries did not bear out the claims set up by Mr. Bass—in fact, that nearly all that he had said was illusory when tested by the New Market machine—it has pleased that gentleman openly to charge them with "unfaithfulness" in their mission, and even makes an insinuation that I may not have dealt with him in "good faith." As for myself, I shall make no comments upon the absurd charge, but I do feel it a duty to raise my voice against the outrage upon two honest men, and I am sure you will give the requisite space in your next number for these few words in their defence.

In giving my opinion upon the question put to me I have endeavoured to do so with respect and fairness, to the best of my judgment, to the labours of all those who have been striving in the direction of a generally useful coal-cutting machine, nor am I aware that I have at any time set up for our own invention more than that it is at least equal to the best of its rivals: but such have been the wild and immoderate claims made by Mr. Bass in favour of the machine for which he is the agent, and so sweeping have been his condemnatory remarks against the Pick Machine, that it became necessary to enquire into and check off his assumptions of superiority, and the results prove the prudence of the step.

Mr. Bass, in his last letter, tells your readers that his machines are at present cutting the coal at New Market Colliery for 1.55 of a penny per ton, including wages, road laying, removals, fixing, and power—a statement which I will venture to affirm is not one-tenth of the sum of the actual cost up to this date at that colliery. You have before you, in the letter of Messrs. Parker and Tait, the managers of the colliery, wherein they say, and no doubt truthfully, "the pressure at which we work the machine is from 50 to 55 lbs. per square inch." I have shown, and it has not been disputed, that the speed of the pistons of their machine is 140 strokes per minute, and anyone can calculate that this consumption of power is equal to 1155 cubic feet per ton of coal, and I am convinced that it costs the proprietors 9d. per foot at a mean pressure of 52½ lbs., so that we have a cost of over 10d. per ton in power alone! What, then, becomes of Mr. Bass's assertion that 1.55d. per ton will find power and wages too?

If Mr. Bass thinks that such statements as this can be accepted by your readers, he will discover that nobody but himself will be deceived by them. As an illustration of the peculiar ethics of Mr. Bass, you will observe that to help him to the conclusion that the coal cutting at the New Market Colliery is done for a fraction over 1d. per ton, he strikes out all the expenses which we ascertained were then being paid for road laying, cutting ends, and removing the machine; but when he comes to state the cost of cutting by the pick, he insists upon every one of these items, although none of them are necessary, as charges upon the working of the pit, except the removal of the machine, which service is covered by the allowance of 10d. per hour for our men, whereas only 8d. per hour was charged for his men for working his machine. I will make no observations upon this, and shall only notice (1) that our machines work regularly in the "dirt" (shale), and do some of their best service therein; (2) that I have never heard of the application of the proprietors for one of our machines to work at New Market until I saw it in the Journal of last week; and (3) that our rails are not "special," but of the ordinary pit pattern, and bright, and his allegations to the contrary are totally unfounded.

I have now to turn to your new correspondent, "A Mining Engineer," and am glad to welcome his observations, because there is not only evidence of his knowledge of his profession, but there is a tone of candour and fairness throughout which, though I may differ from his conclusions upon many points, commands my respectful attention. Your correspondent says that I very much over-estimate the difficulties in the use of the Gillott and Copley machine, and that he "entirely dissents from the estimate of the cost of labour in working the machine," which I had quoted. My answer is that I gave the actual cost as furnished to me by the manager of the New Market Colliery, and I am prepared to substantiate this statement, but it is quite clear that the working there differs very greatly from his own practice, and there I must leave it. I, too, may have formed an extreme opinion of the difficulties attending its operations, but I still retain that opinion because from his description of his own seam I arrive at the conclusion that there the working is most favourable, that the line of the fibre of the coal is true, and that few or none of the obstructions to the cut, which are usually found, are met with here at present. Be that, however, as it may, I will adopt his figures—(A) How much he pays to the contractors for working the machine, because until I know that, and the length of his benches, and the number and distance from each other, I can form no opinion as to the cost of moving the machine and laying the road, for although the men may not get any "additional wage" separately stated, they may be well paid for it in the gross sum? (B) "The men in the bank make the wheel-hole for nothing." Now, this requires explanation, for I have not found colliers anywhere willing to work for nothing, and as to every bench, there must be at least 5 yards to be cut by hand, and as 5 yards would be a good day's work for a man, I must congratulate your correspondent upon having his lines cast in such pleasant places. (C) What is the pressure of air; (D) and the speed of his pistons, with diameter and stroke of his engines?

The table supplied by your correspondent of actual working from Jan. 1 to May 5 is valuable because it is removed from all speculation and exaggeration. We here see 5004 yards cut in 100 shifts of eight hours each (I insert one shift each for Feb. 3 and March 31, because there were 55 and 30 yards respectively cut at those dates which are counted, but the shifts producing these yards are out); thus,  $100 \times 8 = 800 \times 6.25 = 5000$  yards, being an average of 64 yards per hour. Now, this is only a very little more than a quarter of the quantity laid claim to by Mr. Bass!

Your correspondent refers to some recent trials which have been made by the Baird machine (January and February of the present year), which show an average of 5 yards per hour. A year ago I made an estimate of the working capacity of this machine for the Middleborough Institute of Mechanical Engineers, and it came out at 5½ yards per hour. So we have the Baird now at 5, the Gillott and Copley at 64, and I do not think I overstate the pick at 7½ yards per hour in ordinary measures.

Your correspondent, fairly enough, asks me to give a table of the workings of the pick, the same as he has done of the Gillott and Copley machine, which I regret not being able to do, for the reasons that the West Yorkshire Company do not keep any account of the working of their machines separately; that some of them are idle at certain parts of their mines for weeks in succession, whilst others are working two or three shifts each day; that their seams are all very different in formation, and three out of the four being extremely difficult to cut; and, finally, because their supply of air is so imperfect, being the first air-compressing engines put to coal-cutting, and

which they are replacing now by the most powerful air-compressors ever erected for the purpose. I feel that it would have been better if I could have given the particulars requested, but if Mr. Bass accepts my proposal for a practical solution all these questions will then be ascertainable, and all further contention disposed of. With regard to the expense of cutting out the ends of benches, I may observe that at New Market every bench averages 5 yards of hand-hewing, and the cost is 3s. 1½d. per yard. If they ultimately get a face 210 yards long they must have eight roads of 4 ft. width each (and not seven, as Mr. Parker mentions), which, at 3s. 1½d. for every fall of coal, there would be an expenditure of 34s. 4½d., and this is within a fraction of 2d. per ton, and if the roads are made through the pack I do not see that more favourable results could be expected. Now, in cutting so much coal by hand, the entire destruction of the coal which Mr. Parker says is worth "three times as much as any other part of the seam" takes place, and in the eight benches referred to the hand work will come to not less than 20 tons; then, 2s. 6d. per ton for depreciation—and this must be a very moderate allowance—adds 2d. more per ton to the real cost of the user of a Gillott and Copley machine, and these together reach 4d. per ton.

I notice "A Mining Engineer's" opinion as to the two principles—pick & rotary cutting-wheel—and his comparison of them with the slotting machine and the steam-hammer. He says that he should never think of making a slotting machine to work like a steam-hammer. Neither would I; but this, surely, is no proof that a rotary machine will cut coal more cheaply than a pick. A slotting machine and a steam-hammer are different mechanical movements, to be used under entirely different circumstances, and, therefore, the reason he gives for his preference is inapplicable.

I have only a very few words to say about the letter of Messrs. Parker and Tait. They are most respectable men, but evidently in a state of confusion on some points. They state that their normal pressure is 50 lbs. to 55 lbs. per square inch, and this is, I believe, strictly true; but they also say that they saw the pressure-gauge marking 24 lbs. when the experiment on the 28th ult. was going on, and this is consistent with truth. They, however, may not have seen that, in endeavouring to work at 35 lbs., as they did on that occasion, the power ran down under the enormous consumption of 140 strokes per minute with two cylinders; that it was collapsing, and I have reason for believing that but for two stoppages during the exhibition, of one minute each, the Gillott and Copley would have overrun the compressing engine, although it is of about 30-h.p. at 35 lbs. per square inch. Only fancy a 30-horse power engine to drive one Gillott and Copley machine, and cut the coal at a cost of 0.70 of a penny per ton in power! I quite agree with them in the passage following: "To tell the truth, any machine that will not cut in the dirt, is not worth a shilling at the New Market Colliery." But as the pick machine will cut in dirt or pyrites, where no rotary can act, the remark does not apply to my case; and when they say that they introduced the rotary machine for the only reason that they knew that it would do it, may I suggest that the Winstanley and Barker machine was a rotary, and ask why it did not answer? It was introduced by them, and then discharged.

Burley Wood, Leeds, May 19.

WILLIAM FIRTH.

## COAL-CUTTING MACHINERY.

SIR,—We find in the Supplement to last week's Journal a letter from Mr. I. G. Bass, of Sheffield, reflecting seriously upon us, and we request from you space for this letter to defend our characters from his aspersions. We were requested by Mr. Firth to go to the New Market Colliery, on Monday, April 26; but on arrival there found that the machine could not be inspected on that day, and, by appointment with the manager, Mr. Parker, we attended again on Wednesday, April 28. We were instructed to ascertain carefully every particular about the working of the machine, and note it down, which we did—the gentlemen there giving us frankly every information, and we reported fully and accurately upon it. Mr. Firth on receiving our report requested us to go again to the colliery to check off two or three items, and we did so on April 30.

Mr. Firth's letter to you, founded upon our report, as given in the Journal of May 8, is a strictly true account as furnished by us to him, and we hereby declare that every one of the points named by him is accurately set forth as given to us at the colliery, and entered in our books at the time, and in the presence of the gentlemen in charge of the works.

We feel indignant that Mr. Bass should dare to impugn our faithfulness, honour, and veracity, and beg to inform him that our reputation is as dear to us, and stands firmly in the minds of all who know us as his can do, and we throw back the imputation with the disdain that so unjust a charge merits.

JOHN OXNARD, Mining Engineer.

EDWIN HOGGINS, Mechanical Engineer.

Tingley Collieries, May 18.

## COAL IN NOVA SCOTIA—THE PICTOU COAL FIELD—No. I.

SIR,—The object of the writer is to give a description of the Pictou Coal Field, with its seams of workable and unworkable coal in the different areas, with the faults running through them, and the probable places where good coal is to be found, also the impure or bad coal, and where small seams may likely be found, but not in workable quantities. Also a description of the different collieries in operation, with the mode of working, from 1866 to 1873, including as nearly as possible the amount of expenditure for improvements by each company upon each area. The writer will also attempt to show, by questions and answers, the great waste of capital upon the different areas and collieries, showing where improvements can be made for the benefit of employer and employed, and how it ought to affect the consumer of coal. Also, the accidents which have occurred in and about the mines, and their probable causes. I shall begin with the Albion Mines, and go through the whole of the areas in detail.

The Albion Mine belongs to what is called the General Mining Association. This mine has been in operation many years, and has an area of 4 square miles, and the whole of this large area is underlain, with the exception of a very small portion, by the following seams of coal. The main seam, the thickness of which may be given as 38 ft.; the deep seam, so called on account of being the lowest worked upon this area, is given as 24 ft. thick; the next, or third, seam has a thickness of about 9 ft.; the next, or Purves, seam has a thickness of about 6 ft.; the next, or Fleming, seam is about 3 ft. thick; the next is the McGregor seam, about 11 ft. thick; the next is a seam which has not been opened, or named, and which I shall call seam No. 7, this seam is about 11 ft. thick; the next is the Stellar, or oil coal, which is about 4 ft. thick, with a few inches of coal over the top; the next is a seam which has not been opened, or named, and which I shall call seam No. 9, this seam is about 11 ft. thick. This I shall call the bottom of the coal seams, although there are four small seams below this point, but they are of no value. To sink a shaft, commencing at the top of the main seam, to cut the whole of this vast mass of coal would take 78 ft., and would cut a total thickness of coal seams of 117 ft., which would represent the enormous amount of 451,803,280 tons.

There are two seams which overlie the main seam on parts of this property, one about 2½ ft. thick, containing about 2,220,000 tons, the other, about 5 ft. thick, containing about 500,000 tons. This added to the above would amount to a total of 454,423,280 tons. All of this large quantity must not be considered available or marketable coal, which is here represented as underlying the foregoing area, because such is not the case, only the total amount of coal and coal matter deposited in this property. The outcrops of seams were found commencing at what is called the Back Mines bridge, with main seam, then following up the brook, which runs in nearly a southerly direction to what are called the Ashfelt houses, and No. 9 seam will be found cropping out at the first house above the brook. All nine of the seams are cropping out on this brook, and the overlying seams will be found cropping out between the Middle River and main post road and Bear brook, near the western line of this area. The other overlying seam will be found cropping out on the road leading from the Middle River main post road northward to James Fraser's, or Smokytown, and about 1800 or 2000 ft. above the main seam. At the Back Mines bridge the seams dip about

north, 58° east, at an angle of 20°, but this dip and angle do not continue any great distance. On going westward I find the seams gradually turning west, then south-west, and at one point I found the course south, which would indicate a west dip. On going south-east from the above-named bridge we find the seams do not continue the same course any great distance in that direction, but gradually work round to the south, so as to form almost the shape of a horse-shoe, and the dip corresponds with the strike.

COLLIER.

New Brunswick, April 30.

## GAULEY-KANAWHA COAL COMPANY.

SIR,—As your correspondent, "A Shareholder," in submitting a quotation from the *New York Engineering and Mining Journal*, probably thought that it would be satisfactory to his brother-shareholders to invite a reply in reference to the present state of the property and works, you will, I have no doubt, allow the following statement to appear in your next number.

The shareholders are aware that, owing to delay in obtaining the requisite funds for carrying on to completion the various works on a larger scale than had been originally contemplated, and during the temporary absence of the manager in England, the contractor for the railway entered an action against the company. His claim has since been met, the whole balance being now forwarded to meet the last of the bills drawn on the company, as arranged. I am not sufficiently acquainted with the private affairs of the colliery manager to explain his reasons for seeking employment elsewhere for his sons, but as both the bituminous and cannel coal seams are now being opened (I hope actively), I am safe in asserting that as much is being done as the mine admits of. The lumber business is one that requires patience. The market in America being very low, in consequence of the general dulness of all business, the directors have thought it better not to force sales in that country. Arrangements are being made to ship direct to Liverpool some of the most useful kinds.

The rails for the branch line were purchased and paid for in England, and the extra cost for duty and transport to Hawk's Nest is in the general manager's hands. The rails were in Richmond on May 3, and are now, probably, being laid. The locomotive is also paid for. Arrangements are making by Mr. Trotter to contract for the sale of 1000 tons of cannel at very remunerative prices as soon as it can be sent to New York. There are no outstanding debts, and nothing but labour to be paid for.

The development of the 11-ft. seam of bituminous coal (which is by no means soft), and the value of which is unquestionable, has always been regarded, and still is regarded, as the main object of the company. The works for opening it up on a large scale are steadily progressing. The sale of the cannel offering a prospect of larger and more immediate profit is an additional matter, and one which may be depended on so soon as the seam shall be sufficiently opened. The grading of the incline and timbering for working this seam are already nearly complete.

In conclusion, allow me to say that those who have invested money in this property on the strength of my estimate and statements will probably find they have not made a mistake. D. T. ANSTED, Westminster Chambers, Westminster, May 20.

## MINING IN QUEENSLAND.

SIR,—The quantity of tin forwarded from the Warwick Railway Station for the month of February was—

Stream tin ..... Tons 395 9 121

Ingot tin ..... Nils

A reduction of over 70 tons on the same month last year. But this reduction is fully accounted for by the floods; the damage done by which has been almost all repaired ere this. Up to the present date there has been a reduction in receipts at Warwick, but a large quantity of tin is coming down, which will be received before the 31st of this month. The fall that has already taken place in London, and continued advices of a drooping market, has made buyers here indisposed to speculate, consequently much of the tin remains in first hands, and the prices on Stanthorpe are in proportion much lower. This may affect a few of the miners who are working on poor ground, who, most likely, will pack up and start for the Palmer, where all eyes are now turned. The wet season is over, and the rush north of the returning diggers has just commenced. I know of a good few of the tin miners who are returning, but I cannot say that they will diminish the production of tin to any very great extent.

I see in my letter in December's issue I estimated the stream tin at 65 per cent., this it is unnecessary for me to explain was an error on my part, apparent to anyone connected with the trade. The average last year stood between 63 and 64, that is the average quoted to me by the most experienced man in the colony, and I have adopted it in preference to my own. But, after all, most of your readers will estimate the matter for themselves, and your arrivals of ingot tin in London is the only safe test to go on. The fall in the copper market will put a damper on our ventures.

Brisbane, March 16.

RESIDENT.

## THE NICKEL, COBALT, AND CHROME IRON MINES OF NEW CALEDONIA.

SIR,—As you were good enough to publish, in the Supplement to last week's Journal, a short letter from me on the above subject, and in which I mentioned that both chromate of iron and nickel existed in very large quantities at Mount d'Or, and in positions accessible to coal and water carriage, I trust you will afford me space in your next issue for a few more particulars, which I now give.

The nickel of New Caledonia possesses features of peculiar interest, the principal being that its chemical condition is very favourable for metallurgical treatment, the ore being free from sulphur, arsenic, antimony, or any of the other base metals usually found with it. The chrome iron is of large value for the manufacture of the different colouring compounds used by painters, and in addition to the ordinary chrome colours, chrome yellow, chrome red, &c., a new colour, chrome green, has recently been discovered, much superior in brilliancy to Schue's green, cheaper, and possessing for paper printing the advantage of being free from arsenic. When in New Caledonia numerous specimens of all the principal metallic minerals found there were presented to me, and I had every opportunity afforded me of judging of the resources of this island. Coal has been found in large seams (joining the Percy and Kelly Nickel Mine), but whether it be the true paleozoic coal or not I had no means, in the absence of characteristic fossils, of determining. However, the quality is good, and the discovery valuable. The discoveries of chromate of iron is of a much earlier date than is generally supposed, as some French naval officers took some specimens to Sydney from Noumea (at that time Port-au-Franco) in 1861, and even before that time some specimens were handed to the eminent geologist, the Rev. W. B. Clarke, by Admiral Erskine, then commanding Her Majesty's ship Havanah.

I now give you a few more analytical tests of the chrome iron, a brown serpentine accompanying nickel ore, and a rich vein of nickel ore, which complete the assays made in Sydney. Assay by Prof. Livenside, Sydney University—Chrome iron, 32.11 per cent. of metallic chromium, or 46.80 per cent. of chromium sesquioxide; brown serpentine, 10.78 per cent. metallic nickel. Assay by Mr. J. G. Latta, analytical chemist of Melbourne—Rich vein of nickel ore, 21.38 per cent. of metallic nickel; and complete analyses as follows by—

Dr. Liebus (Sydney Mint).	Prof. Livenside (Sydney University).
Silica .....	48.90 .....
Magnesium .....	10.93 .....
Nickel .....	6.46 .....
Sulphuric acid .....	0.83 .....
Iron and .....	15.13 .....
Alumina .....	17.75 .....
Water .....	47.00 .....
	22.00 .....
	24.50 (oxide) .....
	1.00 (A) .....
	5.00 (I) .....
	5.00 .....

Since my arrival in this country I have been informed that any precise information as to analysis, &c., not being circulated here, has prevented to a great extent the working of the nickel mines; and, therefore, I refer your readers to the *Mining Journal* of May 15 and of this date, in which assays of the various kinds of ore are furnished, and as the character of the nickel ore found at present in New Caledonia seems to be pretty similar, a fair idea can now be formed as to the percentage of the metallic nickel. Generally, there will be



found the brown serpentine accompanying the surface nickel, the nickel ore (the nickel casing, a vein of chrome iron), and chrome iron; and for further guidance I give an extract from a private letter from Prof. Liversidge respecting nickel:—"Substances found are—oxide of nickel, magnesium, silica, iron, aluminium, and calcium." The nickel ore is a silicate of nickel and magnesium, with certain impurities; and the brown serpentine is an impure silicate of magnesia, containing a small proportion of oxide of nickel.

Before concluding, I should mention that about 100 tons of nickel ore from the Grand Mount d'Or Company are now on the way to London by the Hydarpas, for transshipment, I am told, to Belgium; and the Percy and Kelly Company have about 130 tons of 10 per cent. ore ready for shipment. Some difficulty exists in reference to these new mines in consequence of the want of proper appliances for the reduction of the ore, and the diversity of opinion as to the proper method of heating it in a large quantity, some affirming that it should be treated chemically, and others that it ought to be smelted. As a consequence of this want of information and the want of capital, the principal claim (Percy and Kelly's) will, I am informed, be placed in the London market with a view to obtaining the necessary funds to erect the necessary works after a report and an examination by a competent person sent from here. There is no doubt the discoveries are very rich, the quantities of rich ore being, to all appearance, almost unlimited.

In my next letter I will give you the results of analyses of the "Garniers" (New Caledonian) nickel, and the "Redwanskite" or "Redfanskite" (Hermann) nickel.

NOUMEA.

#### SPANISH COPPER PYRITES.

SIR,—I can well understand that those interested in the Scotch copper pyrites—which, for the moment, are the largest importers of Spanish copper pyrites—should feel somewhat alarmed at the prospect of the quantity of pyrites sent to this country being doubled or trebled by the operations of a rival undertaking; but there would really seem to be less cause for alarm than some have supposed. It is an established fact that, notwithstanding the constant political disturbances in Spain, mining and miners there are but little interfered with, and so far as English capitalists are concerned they have certainly received larger dividends from mining enterprises in Spain than in any other country. Copper pyrites mining will prove no less remunerative to them than lead mining has.

It is urged that because the Frenchmen and Scotchmen have taken eighteen years to reach an extraction of 500,000 tons per annum, Englishmen ought not to interfere with them now to diminish their profits. I do not see the force of the argument, as it is a usual rule of business that if you see an opening for making 20 per cent. profit you try to get some of it. This creates the competition which is undoubtedly beneficial to the consumer and, I believe, not prejudicial to the producer. By greater energy and increased facilities the rival concern will reach an extraction of 500,000 tons per annum in less than a fourth the time which the Franco-Scotch required, and from the large commercial connections of the new enterprise they will be quite as well able to command a fair share of the trade as their older competitors. The additional richness of the new company's ore is certainly no disadvantage to it. The old company has always been far too pugnacious when there has been any prospect of competition, instead of meeting it by increased energy, or, better, by taking no notice of it whatever. If both cannot make profits the strongest will survive, whatever may be written about possibilities and impossibilities.

No fear need be entertained that the markets of the world will be swamped by an additional 10,000 tons of copper and 200,000 of sulphur, and the notion that England alone is a purchaser of ores such as are raised in the Huéla district is altogether erroneous. Let both undertakings use equal energy and perseverance and all concerned will earn dividends that will well repay them for their investment.

May 20.

A SHAREHOLDER IN BOTH COMPANIES.

#### THE EBERHARDT AND AURORA MINING COMPANY.

SIR,—I have no doubt you remember a letter which you were kind enough to publish for me in the Journal in the year 1872 on the above company, in reference to limestone formations, and the little experience which existed then in relation to them in the United States. I gave you therein the practical data I had collected for a period of 20 years in Chili, Peru, Mexico, and Spain, and at the same time illustrated such with diagrams, believing that this data "would be useful in furthering the interests of mines in lake formations in the United States of America, for till recently they were not known, and consequently would puzzle most miners."

The various illustrations and practical examples given by me had the object of guidance; at the same time I stated then that time would prove that although mines in such formations had their ups and downs, White Pine would eventually rise again from the fearful depression caused by the want of experience and reckless management. I am glad to see this company recovering from the ravages of the great grasshopper, alias the wire tramway, which devoured so much of the working capital, and with such useless results. I am certain that Capt. Drake (the American manager of the company) will bring it to a satisfactory success. He has had of late years a great deal of practical experience in White Pine, he is identified with that district, and no doubt feels great pride in the future of its success.

I hardly believe that Mr. G. Attwood, who was formerly connected with the management of this company, could have extricated it out of its difficulties, any more than he is notable now to get the Emma out of its present predicament. When he finds he cannot succeed in getting a mine into a new bonanza (not having the practical experience for this) he comes out in the role of what miners call "wet blanketing." However, as we see now, by the successful way the Eberhardt and Aurora is being managed, this manner of getting out of a difficulty is not very successful in the end. No doubt I am judged rather enthusiastic the other way. But what would become of mines if miners had not the bump of hope developed to some extent?

I have some hopes still of Mineral Hill, and I believe I am not very far wrong, for after the collapse I did not "wet blanket" Mineral Hill, but requested the committee of investigation to continue prospecting, and not to wind-up the concern. It is now three years since I inspected Mineral Hill for Messrs. John Taylor and Sons, and the mines continue to be worked, producing about 200 tons a month, or about 8000 tons in the last three years.

It will be seen from the foregoing, as I have often stated for the last four years, that limestone formations are rather eccentric, but when properly understood they turn out as great riches as other rocks. I will quote a very practical saying of my esteemed friend, Mr. J. E. Clayton, of Salt Lake City—"That in mines there is no royal road to their riches."

HENRY SEWELL, M.E.

10, Upper Westbourne-terrace, May 18.

P.S.—As Mr. Askew might again repeat his statement that the Emma Pamphlet was written in order to saddle the public with shares, I will here again state for his information that I have never held a share in the Eberhardt Company, nor do I hold any at present, nor does anybody hold such for me any more than has been the case in the Emma Mine for the last six months.

#### JAVALI MINE.

SIR,—I am quite puzzled with the position of these shares in the market. They are quoted in last week's Journal at  $\frac{1}{2}$  to  $\frac{3}{4}$ , although the reports of profits made this year show a sufficient margin to meet all fixed liabilities (including the 500% per annum voted to the directors), and pay a dividend of 10 per cent. per annum. The report for March shows a profit of 563*l.* 3*s.* 4*d.*, although the Easter holidays caused a loss of eight days' work; and the yield of gold averaged 9 dwts. 22 grs. per ton, as against 7 dwts. 4 grs. in February, and about 11½ dwts. in January. If these gratifying results are contrasted with the reports of the Chontales Mine their favourable character becomes still more apparent, as the yield reported from that mine in January was 3½ dwts. of gold per ton of quartz, Feb. 3 dwts., and the March report gives 3½ dwts., with a net profit of 54*l.*; yet, strange to say, these shares are quoted at  $\frac{1}{2}$  to  $\frac{3}{4}$ , or only

5*s.* per share below the Javali. The reported profits for the three months from the Javali Mine amount to 2914*l.* 9*s.* 9*d.*, and for the same period the Chontales profits amount to less than 150*l.* I can only come to the conclusion that either the Javali 2*l.* shares are worth considerably more than 12*s.* 6*d.* to 15*s.* (at which price the profits amount to nearly 30 per cent. per annum), or the Chontales quotation is absurdly above the actual value of the shares.

May 19.

INVESTOR.

#### ROCK DRILLS.

SIR,—That the public may be correctly informed (some erroneous particulars having been circulated), we beg to state, through your columns, that our system of boring machinery has been exclusively and definitely adopted for the future prosecution of the St. Gothard Tunnel. One type of our machine is to be employed for the advance headings and all the principal workings, and of this type 60 were ordered of us by the contractor, M. Louis Favre, on April 29 last. In so far as any other arrangement of boring machine is to be used, it is another form of our machine already in use—the Quarry drill, of which 24 were ordered on Feb. 13 last.

We may further state that comparative trials of the different machines having been recently made at the St. Gothard Tunnel by filling a large reservoir to six atmospheres and working it off by each machine in turn, it was found that our machine continued to work until the pressure was down to one-half atmosphere, while none of the other machines worked below one and a half atmospheres.—Lombard-street, May 20.

McKEAN AND CO.

#### DYNAMITE AND POWDER.

SIR,—Allow me to observe through the Journal that I was one who early adopted dynamite as an explosive in blasting on its introduction into this neighbourhood. I have used little powder in our mine for some years, but such has been the unsatisfactory results of dynamite of late that I have come to the conclusion that its explosive force has much deteriorated, and is now little better than powder. Some of my neighbours are trying cotton gunpowder, which is said to be very strong. I trust this will be found superior to the dynamite now in use; no one can question its necessity if we would wish to do much work in our hard tin lodes. Why do the Dynamite Company not give us a better article?

CARN BREA.

Camborne, May 20.

#### GAS MACHINES FOR MINES.

SIR,—Your notice of Mr. McAvoy's gas-making apparatus led me to his office in Lawrence Pountney-lane, and for the information of other subscribers I will briefly describe the machine. The whole apparatus occupies a space of about 6 by 4 ft., and can be conveniently placed in an outhouse. The gas is made by placing gasoline—a product of petroleum—in a reservoir, and by a weight motive-power an air-forcing wheel is made to revolve inside the machine, which draws atmospheric air into the apparatus, and passes it through a carbureting compartment. The whole apparatus is simple in construction, most easily managed, with less than five minutes daily attention, no fire or heat is used in the manufacture, and there is no smell or dirt. The gas burns brilliantly, and is without the accompanying impurities of coal gas. Mr. McAvoy showed me testimonials received from well-known gentlemen who are using his apparatus, some of whom have abandoned their own coal gas apparatus, and others have abandoned town gas. The McAvoy machines are made by a company called the Auto-Pneumatic Gas Machine Company.

A. T. B.

#### WIND POWER FOR MINES.

SIR,—When a discussion took place some time since in the *Mining Journal* with reference to the application of wind power to the working of mines, I believe it was stated that the great difficulty was to secure regularity of motion—that when a strong wind was blowing the apparatus became quite uncontrollable if made large enough to work when the wind was slack, and if made to suit the strong wind it stopped altogether for half the time. But for these inconveniences, it was acknowledged that wind power would be very desirable, and at the same time economic; and if this was the case when coals were much cheaper than now the desirability of making some efforts in the same direction.

Now, it appears to me that these are only minor difficulties, which could be very readily got over. As to the irregularity of the motion, it could easily be prevented by the use of double-cone pulleys, the band upon which could be moved by a lever attached to a pair of ordinary governor-balls. As the cones could be made any necessary length, and the bands of any desired width, there would be no difficulty in getting a good tight, whilst the fact of the double-cones and bands being so completely under control that they can be used in the manufacture of pottery will convince the most sceptical that regularity of motion can be secured. It was also mentioned that when the fan with a vertical axle was used there was much difficulty in starting and stopping when a high wind was blowing; but I saw a fan on a small scale with the catches so arranged that they were all drawn within the frame by simply permitting a stop to run up an inclined plane; all the shutters then went with the wind, and the machinery stopped instantly. The starting was effected by throwing out the catches and pushing the fan half-a-foot with the wind, the result being that the fan was almost immediately running at full speed. The catches at top and bottom hold quite as firmly as at the sides, and the machine (which was pumping water from a 12-ft. well) did not require repairs or attention, beyond lubrication, for six months. If any correspondent could give the price at which (say) a 10-horse wind-engine could be erected at a mine in Cornwall I feel sure there are many mine agents who would be inclined to adopt it.—Redruth, May 20.

MINER.

#### INVERTED PLUNGER POLES.

SIR,—I am surprised that your New Brunswick correspondent, "A Cornish Engineer," should not have known that the "inverted plunger pole" was no new idea in Cornwall. Thirty or more years ago it was adopted in the Marazion district. It is not a good method, and no one would have recourse to it except as a makeshift. It would be far better to avoid the "penny wise and pound foolish" practice of sinking shafts too small to fix and do the necessary work in. It is one of the evils which afflict mining—the sinking of too small shafts and fixing inadequate pump work. There is no end to the expense and trouble of this too general error. I once had an artisan working at one of the mines under my supervision whose practice was attended with more than ordinary errors, and when ever I called his attention to them he almost invariably replied "Oh! well, sir, I can alter that." He never seemed to be aware that doing work twice over, and wasting material, was attended with any inconvenience and unnecessary expense to his employers. Need I say that there is too much of this sort of thing associated with the practice of mining at the present time.

ROBT. KNAFF.

Llanrost, May 17.

#### SHIPS' WATER-LINES.

SIR,—In laying down a ship's water-lines there are certain well-known mechanical laws to be observed, and if the lines are laid down in strict accordance with those laws you get a hull as near perfection as is possible with the dimensions, length, breadth of beam, and draught you have to work to.

In putting any mass of matter into rapid motion, it is well understood that the most economical mode is to commence with an imperceptible motion, and constantly accelerate the speed until the required velocity is attained. In laying down a ship's lines this principle, I think, never ought to be lost sight of. A ship in passing through the water creates two currents, flowing outward on each side from the course of the ship, and most of the propelling power is absorbed in the production of these two currents. Now, what we want is a hull of such a shape that at the stem, where the current commences, it should be imperceptible, and the outward motion should be constantly accelerated. The lines for the run being, of course, laid down on the same principles.

Most of the shipbuilders in the provinces lay down their lines by first making a model to scale, taking the model to pieces, measuring

it, and laying it down on the floor of the moulding-loft full size from those measurements. Obviously a very incorrect mode of working. By laying down the lines on the principle referred to above no model is necessary. The distance of any point in the hull can be ascertained by figures, and laid down with mathematical correctness. I have made a model for a fast screw-propeller in this way which appears perfect, and it is quite as easy to lay down the full size.

Would it not pay some large shipbuilding firm interested in attaining high rates of speed to offer a premium worth competing for, for the best model to attain that end, the respective merits of the models to be decided in this way. Fix on dimensions—length, draught, and beam—and also the scale of the model, and let the competitors make full models, weighted to the required draught. Have a trough with a current of water flowing through it at (say) ten knots an hour. Place each model in this trough, anchored to a spring-balance, taking care that the current is always the same, and whichever model registers the least weight on the spring-balance is the best model for speed.

CORNISH ENGINEER.

Albert Mine, Albert County, New Brunswick, May 1.

#### THE MINERAL RESOURCES OF IRELAND.

SIR,—In perusing an article from your Special Correspondent, dated May 1, I was rather disappointed in his not dwelling more prominently on the various resources of the Browhead Mine—more especially on its great mineral deposits. When my father was manager (for the late Sir William Brougham and Partners) he extracted from one lode copper to the value of 9000*l.*; the lowest price per ton was 23*l.* 6*s.*; one ton of prills realised 46*l.* 3*s.* 6*d.*, producing 35 ozs. of silver. There are four other lodes of most magnificent indications. A proposed engine-shaft was sunk on the Champion lode, and at the depth of 2 fms. the lode produced half-a-ton of grey and yellow ore to the fathom, impregnated with silver. This lode is 12 ft. wide, and at the time the mine was stopped was only 2½ fms. in depth; on the three other lodes nothing whatever has been done.

To the north of the flooring is the flag quarry mentioned by your correspondent. I fully endorse his opinion as to their value for flooring purposes. I have seen them split from ½ in. to 3 in. in thickness. On two sides of the flags runs a black border, 2 in. in width. When paving the floors and houses on the mine we extracted them as large as 16 ft. by 18 ft. The width of the vein is over 500 yards, and its length from one side of the headland to the other requires no outlay to remove the debris, as it all falls into the Atlantic Ocean, whose billows roll at the base of the vein. I am confident that if they were once introduced into the market they would command the highest price given for flagging material, being far superior to slate flags in every respect. Let any person visit the mine, and examine the quarry, and they can certify my saying that Nature has done her work to perfection in producing a flag that requires no sawing, and what is of more importance, no planing, they being almost as smooth as a board, the only expense being necessary is splitting and shipping them. To the south of the flooring, and east from whim-shaft, lies the slate vein (also mentioned by your correspondent). Its true length or breadth is not known. The only thing that has been done on it was to extract sufficient to slate the mine houses. The slates are of a dark-blue colour, and highly laminated. They are also extremely tough, pliant, and durable.

It may be asked—"If the Browhead Mine has such splendid indications of mineral wealth, why was it stopped?" For this reason, one of the shareholders, acting on my father's advice, bought the whole concern from the rest of the shareholders. At the same time he was largely engaged in American railways. Twelve months afterwards he failed in his railway undertakings, and what was worse, just as the mine was beginning to return profit, after clearing the expenses incurred in the erection of machinery, offices, barracks, floors, &c. My father and another manager of mines worked the mine on tribute for two months, making a clear profit of 250*l.*, part of which the landlord claimed for previous royalty, and at that time refusing them the liberty of prosecuting the works until they paid down 2000*l.*, and, in consequence of their inability to do so, the work was stopped.

JOHN PENROSE, Jun., Mining Engineer.

Tremadoc, North Wales.

#### THE VAN MINE.

SIR,—The phenomena of mining investment and speculation must be a never-failing source of surprise to those who are outside the mysteries of market operations. Thus the soundness of a mine and the regularity of its dividends seem to have but little of the effect one might imagine in the raising of the value of its shares. A remarkable instance of this is the great Van Mine. It has now paid with unfailing regularity some 20 or more handsome dividends, its reserves of ore are stated to be something like 2,000,000*l.* worth, yet although the price of lead has been regularly rising for 12 months past, and owing to this circumstance, and the improved arrangements at the mine, together with its increasing richness, the returns are nearly a third larger, the shares are but slightly risen comparatively. The reason for this, no doubt, is that the very solidity of this investment precludes to a great extent the introduction of the speculative element. Therefore, whatever rise there is may be regarded as genuine and safe. It is true they are now at 24*l.*, and that in the beginning of the year they were down to 20*l.*, but this was only for a few days, and simply owing, I have understood, to a large number of shares being just then placed upon the market. The gross returns of last year were, I believe, something under 70,000*l.*, and taking the last monthly sale of lead and blende (9300*l.*) as a basis of calculation, and considering also the still rising price of lead, the gross annual returns may probably amount this year to considerably upwards of 100,000*l.* Again, when there is added to this the consideration of the retrenchments announced in the expenditure for labour department, and which will effect, it is calculated, a saving of some 5000*l.* or 6000*l.* per annum, we may fairly look to see a vast increase on the sum heretofore available for dividend. How is it, then, that the shares do not move on?

A SHAREHOLDER.

#### MINE REPORTS—THE VAN MINE.

SIR,—There is a peculiarity usually attaching to the reports of British Mines which distinguish them from foreign productions, and that is their great plainness in the vernacular, combined with the consistency of their several parts one with another. If this were not so it would be useless to publish the estimates of productive mines in detail, together with the price per fathom, and the aggregate yield of the working, as the publications of such facts is the shareholder's current guide in anticipating pecuniary results. I have read the report of the Van Mine, dated May 6, and was struck with the smallness of the aggregate—600 tons of lead—as compared with the detailed estimates of value. This led me to look a little more critically into the matter than I usually do. I shall not go fully into the report, as an explanation of the point with which I am about to deal may suffice for all. It is stated that at the 75 fm. level 10 stopes, of the average value of 220*l.* 10*s.* per cubic fathom, are in working by 76 men, and at the average price per fathom of 3*l.* 11*s.* 6*d.* I do not know whether the cost of materials used by the men—candles, powder, fuse, &c.—is included in the contract price or not, but if it is the men's wages must be exceedingly small, or else the yield of these stopes should be at least double the total returns of the mine. At 3*l.* 11*s.* 6*d.* per fathom each man should stope to earn, if costs are not deducted, a trifle over 1*l.* a week—1½ fathom per month, which multiplied by 76, the number of men employed, would result in a gross total of 95 fms. per month, and as the whole of this ground is valued at 220*l.* 10*s.* per fathom—to give which each fathom must yield to an average of 14 tons 7 cwt. 1 qr. 2 lbs. of lead ore per fathom, which multiplied by 96, the number of fathoms which should be worked, according to the price per fathom stated, shows the enormous result of 1364 tons per month from these stopes alone, or more than double the entire product of the mine.

It will be seen that I have neither strained or distorted the figures, but simply regarded them in their legitimate order and effect. I presume nothing, but that the men to earn a bare livelihood at the



We may fairly estimate, I think with safety, that on the average there will be one window to each of the 30,000,000 inhabitants of this country, and taking it that we make 1-15th, that would be 2,000,000, or equal to 14,000 gross. These, at a profit of 11s. a gross—and he had reduced the actual profit by nearly 50 per cent., as it amounted in reality not to 11s., but to over 11. per gross—would yield over 70000. This gave a total of 20,0000., and he fully expected they would have such a demand for their bands, or even beyond it. Further than this, in the prospectus of the American patents. These patents have four years longer to run than the English ones, and would, therefore, be more likely to be progressing at a very rapid rate, and where the people were keenly alive to the value of any invention that was at once simple and effective, I am confident that nowhere would the people be more ready to take up our window cord on account of its simplicity. A friend of mine who has travelled a great deal in America says that in many of the States every farmer is obliged to be his own carpenter, and to have his own box of tools. Well, in order to fix up our window cord, he would not need a box of tools—a simple gimlet would of itself be sufficient. I think, therefore, that our window cord is admirably adapted to the wants of America. Then again, with regard to spinning bands, America is a country that will sell 10,000,000 spindles at a price; one-sixth of the number are at work in this country, and there must be a considerable income from that source also. I may mention that Messrs. J. and P. Curtis, of Paisley, the famed thread manufacturers, who are using our bands in large quantities at that place, have a factory in America, and sent an order some months ago for a supply of bands for their American works. Within the last two days they have written to enquire whether we would permit them to manufacture their own bands for America, so that they might escape the duty. I have not yet received their proposal. I fully expect, however, that we shall either manufacture our bands in America, or that the American patent for a good round sum—probably as much as we paid the vendor for the patent here. Therefore our prospects, so far as America is concerned, are exceedingly good. With regard to the French and Belgian patents, we have secured the invention in both countries, and have also taken steps to secure the patent for Russia and other countries; in fact, in every country where there is any likelihood of a demand for the bands we shall take care to obtain the patent. We wish to have the preliminary arrangement with a gentleman of position who wishes to have the cord put into the market, on a royalty of 10 per cent. at a payment of 30s. per annum per machine, and we are expecting a visit from him to the man who is entering the matter. I may say that when he comes and sees the machines in operation he will not hesitate long before completing the arrangement, and that when his attention is directed to the picture-cord which we are about to make he will be still more anxious. That picture cord is one that was not contemplated at all at first. The inventor saw that there were difficulties in the way of applying his cord to pictures in the fact that pictures required to be placed in a particular position, and that difficulty, however, has been overcome by the inventor going on the old plan of obtaining the pictures in a particular position, and making continuous cords for picture-hanging purposes. There seems to me to be no reason why one girl cannot overlook the working of seven or eight machines, each of which will make 1000 yards a day, at a cost which will enable us to sell this picture cord at 3d. per yard to the wholesale houses. It can thus be retailed at a price which will bring it within reach of the million, because I will engage that you cannot go into a shop in the United Kingdom, and get a cord equal to ours at less than 1d. a yard. A very large profit can be obtained from this cord. I have no difficulty in saying that, if I were to go into the most profitable business engaged in manufacturing operations, and you will tell me that I cannot introduce a superior article at a less cost nothing can stop the demand for it may, therefore, safely say that in the manufacture of continuous cord alone, if we were to occupy all our machines for that particular manufacture, we might realise a handsome dividend, and on that account alone none of us would have occasion to regret having invested money in the company. Then there is another thing. I dare say the attention of some of you has been drawn to a new mode of driving. Mr. Binns has very ingeniously and cleverly contrived a mode in which one endless cord is made to drive a great number of spindles. A man who has some knowledge of machinery, it appears to be far superior to the old mode and the necessary alteration can be effected so simply and inexpensively, that I cannot conceive that spinners will remain long without adopting it. As soon as they see it in operation they must come at once to use it. The process increases the durability of the cord by causing a less angular strain to be put upon it; the cord enters the whall in a more direct line. The great wear and tear of these cords is caused by the acute angle at which they enter the whall, and the consequent rubbing of the cord against the whall. I think I need not obtrude this reasoning, and by the lengthening of the cord its durability is greatly increased. This new invention must tend to increase the demand for the endless bands. Indeed, I must say that it appears to me so valuable an improvement that the two inventions ought to go hand-in-hand together. Mr. Binns has thrown out a hint that the new invention may be obtained on easy terms. There is another little point I ought to mention. The inventor has been turning his attention to the question of what is the best material to be used in the manufacture of the cord. In the first place, he was not very particular about the quality of the cotton used, but he was thoroughly wise in making it so good that it would be almost anything would do. But he found that his invention was not quite infallible, and that it was necessary to use the very best material. So we are now using the best long staple cotton that can be purchased. Mr. George Salt suggested the application of linen for the lapping or outside binding material, which has been found a great improvement. But we are contemplating being more extravagant still, and that is the introduction of silk. The quantity required will not be very great, and need not add more than 2s. 6d. per gross to the cost. Millowners, I am sure, will say that the three months' wear out of the cord, will give the extra cost of silk. Mr. Binns may also say that it would be better to use cotton to him the new mode of driving spindles, and Mr. Salt at once ordered that two frames should be altered so as to try it. There is one more matter to which I wish to call your attention. You will see on the walls of the room those beautiful pictures of her Majesty. We have called our cord the "Victoria" cord, and we thought we could not do better than adopt her Majesty's portrait. The copyright of the portrait is in the hands of the company entirely. Messrs. Smith and Co., the advertising agents, have instructions to advertise them in 2000 of the principal railway stations. I have made another arrangement with a firm to put smaller copies of the portrait on the towers and the walls of the principal stations of the Metropolitan Railway and the Lancashire and Yorkshire railways. Of course, it is no use having a valuable invention unless we let its merits be well known. I dare say I am speaking within the mark when I say that for every one person in this country who knows anything of our invention at the present time there are 999 who are perfectly ignorant of it. This shows the necessity of spreading the announcements over the length and breadth of the land. We anticipate that when these advertisements have been circulated and seen from time to time we shall find a very great increase in the number of orders that will flow in to us. There is a strong probability that the new mode of driving spindles will be brought to the notice of the betting chance there will be of getting it well introduced wherever it is wanted. I think I have now given you the principal points connected with the company's working. If there is any gentleman who wishes to ask any question we will answer him to the



best of our ability. The agreements are all prepared by our solicitor; we are now all ready to go on with work, and everything is in proper train. Mr. Binns has handed over the premises and the machinery. We are in full possession, and he has assigned to us all the patents for their several terms. Mr. GURNEY, J.P., said he was in a position to reiterate all that their chairman had said. He had himself been at every board meeting, and his experience had been precisely the same as had been Mr. Craig's. There was one gentleman (their secretary) who had devoted the whole of his time and energies to the business, and who was thus more likely to be able to form a correct opinion as to the future prospects of the company. They had now spent a great deal of money in the preliminary operations, and had not made much money yet, but he should like the secretary to tell the meeting what they might expect as the result of the present year's operations.

Mr. G. C. SIM (the secretary) said that he had not expected to take any part other than an official one in the day's proceedings; but being a shareholder in the concern himself, as well as the secretary, he was naturally more anxious for its success. During the two months that he had had possession of the books he had done his best to ascertain in a rough way—the only way in which it could be ascertained in so short a time, and amid so many details—what was the actual position in which the concern stood. The chairman had ordered the books to be brought down that it might be ascertained what progress had been made the last week. The shareholders would be glad to see by these books that many large firms in England and Scotland were repeating their orders freely, and nothing could be adduced in favour of the endless band which could speak more clearly than this fact. Where the bands had been fairly tried on their merits they had given satisfaction, and it was a strong proof of the advantages to be gained by their use that several large spinners had now applied them to every spindle in spite of the high price lately charged for them. Having now offered a reduction of 25 per cent. on the old price, he confidently anticipated a very large and increasing demand. He believed that a good dividend would be realised from the sale of the Victoria window blind cord and fixings, as the advantages of the invention for this purpose were so manifest that no one who tried them would be without them. A prejudice existed in some quarters against the introduction of their spinning bands, which was entirely the result of ignorance. In a great measure it had sprung from a fear on the part of the overlookers that the new band would give them more trouble than the old system. As soon as that prejudice was removed he was quite sure that the demand for the bands would be enormous.

Mr. WADINGTON asked whether the secretary could say what number of spindles were now running with their endless bands?—The SECRETARY said he could not well tell that. Last week's orders represented nearly 20,000 spindles, which was as many as they could make with their present machinery for making the spinning bands.

The CHAIRMAN said it had been determined to reduce the price of the spinning bands by 25 per cent., which would, no doubt, increase the demand. He then proceeded to say that it was necessary that the meeting should be adjourned, in order to reconstruct the board of directors. By some mistake in the Articles of Association the qualification of a director had been put down at 200 instead of 100 shares, as was intended. He, therefore, moved that the meeting should be adjourned till the 5th day of next May immediately after the extraordinary meeting, which was to be held to confirm the resolutions of the meeting which was to follow.

Mr. WADINGTON seconded the motion, which was carried unanimously. The meeting then became a special one, and the SECRETARY read the notice calling the meeting.

The CHAIRMAN explained that there was some difficulty in getting gentlemen to qualify themselves for directors to the extent of 200 shares. It was, therefore, thought necessary to reduce the qualification to 100 shares.

Mr. CHAS. SOWDEN seconded the resolution, which was carried unanimously.

Mr. J. GURNEY moved that the figures 25 be substituted for 14 in the 97th article. He said that the alteration was proposed to be made in accordance with the wish of the auditors. The rule referred to the making up of the accounts of the company to within 14 days of the annual meeting. It was felt that 14 days was too short a time, and it was now proposed to make it 25 days instead.—Mr. WADINGTON seconded the motion, which was carried unanimously.

The CHAIRMAN proposed that another special meeting should be called on the 5th day of May, for the purpose of confirming the resolutions that had been passed.

Mr. CHAS. SOWDEN seconded the motion, which was carried unanimously.

On the motion of Mr. GURNEY, seconded by Mr. SMITH, a vote of thanks was passed to the Chairman, who briefly responded, and the proceedings terminated.

The adjourned extraordinary meeting of the shareholders of Binns's Patent Endless Band Company was held at the offices of the company, Oakenshaw Mills, on Wednesday afternoon, May 5.

Mr. W. G. CRAIG in the chair.

Mr. G. C. SIM (the secretary) read the notice convening the meeting.

The CHAIRMAN said: There is very little to be done at this meeting except the passing of a resolution confirming the proceedings of the last meeting, held here on April 20. I do not know that I need occupy your time now by making any remarks, but will defer what I have to say to the ordinary general meeting, which will be held immediately on the conclusion of the present one. At that ordinary meeting the names of directors for the ensuing year will be submitted to you. I have therefore simply to propose: "That the resolution passed at the special meeting, held on April 20 last, be and is hereby confirmed."

Mr. MARSH seconded the motion.

Mr. PINDER asked what was the scope of the resolution passed at the last meeting? Several of those now present had not been at the previous meeting.

The SECRETARY read the minutes of the last meeting and the resolution that had been adopted, the object of which was to make the qualification for directors 100 instead of 200 shares, and also to allow an interval of 28 days between the date to which the accounts of the company were to be made up and the date of the yearly meeting. He explained that, as to the first alteration, the placing of the qualification at 20000 was merely a clerical error, it was always intended to be 10000. As to the second alteration, it was made at the request of the auditors, who said that 14 days for making up the accounts was not a sufficient time.

The resolution was then put and carried unanimously, and the meeting terminated.

The adjourned general meeting of the shareholders was next held, Mr. W. G. CRAIG again presiding.

The SECRETARY having read the notice calling the meeting,

The CHAIRMAN said: It may be remembered that at the last meeting I made some remarks with reference to two subjects—the one being the matter of the French patents, and the other, that of the continuous cord. Since that meeting some advance has been made on both of these points. The continuous cord has been manufactured by one machine, and a series of machines is being prepared in order to be able to supply what we hope will be a large demand for this particular article. It was intended at present only to have one dozen machines adapted for this kind of work, and the one that is already at work is a fair sample of what the others will be. I dare say many of you have been and examined the working of the machine. It appears to me to do all that is required of it. There are on the table before you a number of examples of the cord as folded up for sale. Each bundle will be covered with a printed label showing on one side the application of the cord, and on the other there is an advertisement of the window cord. I see nothing to prevent the general adoption of this cord, and its extensive use, as it is very simple and admirably adapted for the purpose for which it is intended.

We have called it the "Albert Diamond Picture Cord," so as to be somewhat in unison with our "Victoria Endless Window Blind Cord." The other thing that I mentioned at the last meeting was that we were at that time negotiating for the sale, or rather negotiating an arrangement for the working, of our French patent. A gentleman who is largely connected with the manufacture of bands for driving spindles on the old system, and who is one of the largest mill furnishers at Lyons, has been here, and on Monday morning he went over the place and examined minutely the whole of the machinery. In fact, he made some of the bands himself, and in that way thoroughly satisfied himself of their superiority over the old knotted bands. He also made himself acquainted with the process of making the continuous cord, and in company with Mr. Binns, Mr. Gurney, and the secretary, he visited the large factory of Messrs. Jonas Sharp and Sons, Bingley, where there are upwards of 100 frames driven entirely by means of our endless bands, and he satisfied himself of its great advantages, so far as that part of its use is concerned, because he saw that it was in full operation and appreciated in a large establishment in this neighbourhood, which it would not be unless it is something worth having. When a gentleman sees nearly the whole of a large establishment like Messrs. Sharp's being worked with our band, he must be convinced of its great merits. The secretary also showed him the books, containing entries of the orders lately received from large spinning firms in this and other neighbourhoods. I myself came on purpose to meet the gentleman, and before he went away he told me that he was thoroughly satisfied with what he saw, and that he was going back to France to proceed at once in the erection of a large number of machines for its manufacture. He added that he was prepared to advertise the new article as extensively as it is being advertised here. I think the fact that he was so satisfied after inspecting the machinery at work is a great point in our favour. He also said that if we take steps to secure the patent for Italy he is quite prepared to work that Italian patent too. He further stated that he would, at his own expense, secure a further patent for the manufacture of the continuous cord. All these things are, I think, a capital indication of the great value of our patent, and when we find a gentleman of high commercial standing, and of great experience as a mill furnisher, coming over from France and, after examining all the machinery, expressing himself as thoroughly satisfied with the invention, we may, I think, safely conclude that we have got a good article. I trust that very shortly we shall hear that the arrangement with this gentleman is finally completed; indeed, when he went away he said that we might consider the thing settled. The terms have been agreed upon: we are to receive a royalty for each of the 25 machines which he proposes to erect, and, of course, if he puts up more we shall receive proportionately more per annum.

Mr. PINDER asked whether the agreement was signed?—The CHAIRMAN: Only provisionally, but it is to be completed by June 10. I believe that the only thing wanting was the visit to our works in order that our French friend might be satisfied of the value of the band. He has been perfectly satisfied on that point, and he has returned to France. I have not the least doubt, thoroughly determined to carry out the work there. He has ordered the necessary engine-power, and a quantity of cotton for the making of the bands. He has already a double machine at work, and these facts are, I think, a good earnest that he intends to complete the arrangement. The continuous cord has, I am sure, made the thing of still more value in his eyes.

The CHAIRMAN, in answer to another question, said that it was against the French Patent Law for them to supply Mr. Siegle Gougon with machines from this country. All that were to be worked in France must be made in France.

The SECRETARY read a letter with reference to the Belgian patents, &c.

The CHAIRMAN, resuming: We have already sent one machine to Belgium, and

have established our right to manufacture the cord there. Negotiations have been going on for several weeks, and I believe the only thing required is the visit of our agent to Brussels in order to have a similar arrangement entered into there as we are entering into for France. I believe the same thing can be done in Russia. No actual steps have yet been taken for securing the patent there, but the directors have the matter in view. I do not know that I have anything further to say. You will know that the board of directors were only placed in that position temporarily, till after the meeting that has been called in accordance with the Act of Parliament. You are now in a position either to re-elect them or to appoint others if you wish. The qualification is now 10000, worth of shares instead of 20000, worth.

Mr. PINDER proposed:—"That the following gentlemen be directors of this company for the ensuing year: Mr. Wm. Grindley Craig, London; Mr. John Gurney, Bradford; Mr. Herbert Lee, Oldham; Mr. Charles Makinson, Manchester; Mr. Wm. March, Doncaster; Mr. Leedham Binns (managing director), Low Moor."

Mr. DENNISON seconded the motion, which was carried unanimously.

The CHAIRMAN said: I beg to return our thanks to you for re-electing us, and for the confidence you have shown in myself and my colleagues. We wanted a little more "blood" in the board, because we have been too few in number, and you have acted wisely in appointing additional directors. Now, when some of our number are unable to attend from illness or absence from home, we shall be able without difficulty to go on with the business. I hope that the gentlemen who have been nominated and elected will give the same attention to the business of the company that has hitherto been given by Mr. Gurney and Mr. Binns. If they do so I have no doubt the shareholders will benefit considerably. I thank you for the honour you have done me, and beg to assure you that I shall do all in my power to develop the business of the company. That business requires a great deal of attention. However good may be the article we have got, unless the thing is well advertised, and unless every effort is put forward to make it "go," business will lag. All business requires a great deal of energy, and I think we have the right elements on our board to conduct our business with that energy. I may mention that an enquiry has been made by one of the shareholders, in a letter addressed to the secretary, as to when a dividend would be paid to the shareholders. As there is a dividend of 7½ per cent. guaranteed there will be no difficulty on that point. That dividend will be paid at the end of the half-year, as soon after June 30 as the secretary can prepare and send out dividend warrants. An interim dividend will be paid then at the guaranteed rate of 7½ per cent. We shall not have the accounts made up before the end of the year; but it will be unwise to wait till then before declaring a dividend.

Mr. PINDER said he had not himself the remotest idea that a dividend would have been declared before the end of the year; but, of course, he should not object to receiving one.

The CHAIRMAN: If we have business enough to keep the machines fully employed you may be fully satisfied that you can make a first-rate dividend, and I am sure the thing only needs to be made known in order to bring us as much work as we can do.

Mr. PINDER: I have looked over the books this afternoon, and I have been much satisfied at the way in which orders have come in—not only first orders, but repeat orders, which show that the article is giving satisfaction.

The CHAIRMAN: The number of orders is increasing. Last month we had the largest number since we commenced, and this before the advertisements have begun to tell. I have no doubt that in a month or two we shall see a marked difference in the demand for the window-blind cords. Messrs. Smith and Sons are now getting the advertisements put out at the railway stations at the rate of 50 per copy. No doubt the advertisements will tell, but it will require a little time before the retail traders will get the things fully into their hands.

Mr. HEALEY asked what would be the chief source of income the window-cord or the endless bands?—Mr. BINNS said that the profit from the window-cord was larger than from the spinning bands.

After a vote of thanks to the Chairman having been passed the proceedings closed.

#### RICHMOND CONSOLIDATED MINING COMPANY.

An extraordinary general meeting of shareholders of the above company was held on Thursday, at the Cannon-street Hotel,

Mr. JOHN ELLIOTT in the chair.

Mr. THOMAS W. HALL (the secretary) read the notice calling the meeting.

The directors' report, which was published in last week's Journal, was taken as read.

The CHAIRMAN, in opening the proceedings, said that the present meeting had been called in compliance with the wish of the shareholders, as expressed at the last meeting, and the directors were only too happy to accept the view then expressed, as it enabled them to meet the shareholders much earlier than would otherwise have been the case, and to explain to them the present satisfactory position of the company, and the extraordinary success which the company had met with during the preceding six months. On the last occasion he had to explain to the shareholders that the savings which the directors hoped to effect had not been realised to the extent they anticipated, and he also detailed the various causes which had prevented, up to that time, the realisation of their hopes. He had now the satisfaction of stating that a larger amount of saving than was originally anticipated had since been realised, and they had effected a much larger reduction in the working expenses, and obtained a much larger ratio of profits to the returns than the shareholders had ever been led to expect. (Cheers.) Although they had smelted very little more ore than in the previous six months, yet the ratio of profits to returns had been brought from 8 to 12, or some few cents up to 20, or an increase of 25 per cent.

That was a very large sum when it was borne in mind that they had smelted 18,000 tons of ore in the six months. In the years 1872 and 1873, when the mine really began its work, they smelted 18,000 tons of ore; in 1873 and 1874, 20,000 tons; and in the past half-year alone they had smelted nearly 18,000 tons, so the shareholders could judge by that what satisfactory and gradual progress had been made in the mine, not only in the results obtained from the ore, but also in the quantity of ore which they had been enabled to pass through the furnace. The past half-year had been a most successful one for the past six months, and the previous six months, and, therefore, it was most satisfactory to the directors to find that the more scientific treatment of the ore, and also to some extent the increased value of the ore in the latest discoveries, had enabled them to obtain the result he had stated without encroaching upon the reserves unnecessarily. Although there had been the large reduction of working expenses to which he had alluded, still they had not been reduced to the point to which the directors hoped to bring them, inasmuch as the report did not include anything as resulting from a great delay in the working of the mine, and the great delay took place in the establishment of those works, and, therefore, they did not come in to work, so as to "feel the result of the half-year, comprised in the report. During the six months ending Feb. 28 there had been taken out of the mine, as he had already stated, 18,000 tons of ore, and the gold out of that had been in value 62,0000; the silver, 19,0000; and the lead, 51,0000, which would give the shareholders some idea of the relative proportion which the various metals bore to each other in the ore. That was the value of the different metals in sterling; as regarded the weight, the silver was worth 120000 lbs., and the lead 100,000 lbs., and the gold 100,000 lbs. In reality they had a very valuable gold mine, based upon a silver-lead mine. When the mine was first started it was the gold which brought in the profit, because the silver and lead just about paid the working cost; but now this working cost, being so very much reduced, and the improvements in smelting being so much more of actual, the gold did not bear the same proportion to the profit that it did formerly. He thought those statistics would be interesting to the shareholders. (Cheers.) There had been a profit of 11 per cent. in the rate of profit. In 1872 and 1873 they made a profit of 11 per cent.; they made 15 per cent. for the year ending August 18, and now they had made 20 per cent. for the past six months, and he hoped the next time they met they would bring that up to 25, and he was happy to say there was every probability of that result being attained. (Cheers.) The gross total make of the past half year had been 222,0000, and the working expenses had been at the rate of 65 per cent. on that, as against 77 per cent. for the half-year ending Aug. 31, 1874, so there had been an improvement of 10 per cent. in the expenses, which, of course, went towards the net profit. They would see that, as the net profits were about 30,0000, for the six months, it was at the rate of 160,0000 a year, the amount of which was between 60 and 60 per cent. profit upon the capital. Out of that sum the directors proposed to set aside 25,0000, as reserve—in fact, they had already done so, and they had expended 10,6320, upon the refining works, sinking the Richmond shaft, purchase of land, erecting buildings and machinery, and other items running up to the head of "Expenditure on capital account." It was usual in a mine to carry that sort of expenditure to capital account, and equalise it over so many years, but having had such marvellous success throughout the past six months the directors had thought it right to set it to new York and get it refunded, and get the money back on a clear balance-sheet, and leave the capital at the original amount of 270,0000. This was not all. The accounts were only made up to the end of February last, and, therefore, to that was to be added the profits which have since been realised, which would be at least 16,0000, more, so that really they had expended 10,0000, in productive works, they had carried 25,0000, to reserve, and they had another 16,0000, in addition, which was really an additional reserve, and in addition the directors proposed to pay a dividend of 7½ per cent. in the present month. Why the dividend had not been declared before was because the directors thought it right to have the money actually in hand before announcing a dividend. Letters arrived at the office yesterday stating that the money was on its way, and the moment it arrived the dividend would be paid. Therefore, by the end of the present month the sum of 21,14s. per share would have been returned to the shareholders upon each 5s. share. They must further bear in mind the fact that they had also earned 12s. per share more, bringing it up to 33,14s. per share in two years, and it was not taking an over sanguine view to expect that the remaining amount would soon be cleared off, and the money paid on the shares returned to the shareholders. The next question was an important one, was what the directors proposed to do with this reserve. The shareholders were aware that the directors had been attacked on various occasions, and been told they were anticipating profits by borrowing money to pay the dividends, and all that sort of thing: but facts were logical, and he thought the simple fact that they had tied over all that, and enabled to pay the sum actually received, ought to go far in refutation of this assertion. The directors had had a great many remonstrances from shareholders upon the smallness of the dividend which was being paid. (A laugh.) Well, that dividend was small, but it was paid, and it was paid off all the liabilities; in the present year they had paid two dividends of 5s. each, and now proposed to pay another of 7½, 6s. per share, and he had no doubt the directors would be able to continue that, and if it would amount to 30 per cent. for this year; and, looking at this amount of dividend, the directors thought the balance might be fairly put to the reserve, to enable them to avoid the great cost now incurred in borrowing money upon the produce of something like 440,0000, a year, to tide over the period between production and realisation. Hitherto it had taken nearly three months after the bullion was smelted to send it to New York and get it refunded, and get the money back from the refining house. One great object which induced the directors to start the refinery works, after a careful investigation into the probability of success, was this—that they would not only save 200 per ton in the refining, but it would enable the directors to get money for their produce in three weeks instead of three months. That had not yet come into operation, but the board expected to get the full benefit of the operation within the next six months. Their

present position was this—the directors ordered three sets of refining apparatus; one set commenced work on Feb. 18 last, and there were now two sets finished and in work, and it was expected that the third set would be started in a few days. That apparatus was found capable of refining 45 tons of bullion a day. Mr. Probert originally estimated it would be capable of refining only 40 tons a day. The company's own make was only about 17 tons a day, and, therefore, there was a great deal of spare power; and, therefore, not only would a large saving be effected in the treatment of the company's own ores, but a very handsome profit would be made, it was anticipated, be also made from treating the ore of some of the neighbouring mines which were of a similar character, the owners of some of which thus enabled to save the cost of freight, and also shorten the period between production and realisation, which was a great advantage to men who had to wait some time before they could get their bullion. A shareholder had asked to what extent the directors intended to carry the reserve fund? It now stood at 25,0000, and it was of importance to have as much ready money as possible, because in and advantageously if they paid cash than if they gave credit. (Cheers.) (Although it did not operate so strongly now as hitherto) was that they wanted to be more independent of the bullion agent, to whom they had generally been indebted for advances upon bullion to the extent of 70,0000, or 80,0000, and he thought it better to have the high estimation in which the mine was held, that one banker was willing to advance so large a sum of money on the security of the mine, they never had to the least difficulty with Mr. Meyer; in that matter, who had behaved very well, and he was sure the shareholders would not grudge the large sum he had advanced. In another way a reduction had been made by the company having its own refining works. Formerly the New York refiners made a reduction of 10 or 15 per cent. for what they were pleased to call impurities in the lead, but now the company refined their own produce; those impurities were reduced to 3 per cent., so that by doing the work themselves there was a balance of 10 per cent. in favour of the company, and that 10 per cent. upon the 6000 tons annually of lead produced was a very considerable item, as they would find in the next balance sheet. (Cheers.) There was a further advantage, and that was that the lead was found to crystallise with unextraordinary rapidity and ease, and Mr. Probert hoped to be able to produce lead capable of manufacturing whitelead from; and he might mention that lead which was capable of being used for white-lead purposes was worth 4s. per ton more than the ordinary lead of 40s. per ton, and that also was a great advantage. The directors had always rather understated the facts than overestimated them. The report went on to refer to the shareholders, and the time when shareholders since that gentleman's departure from this country. As he had stated at the last meeting the directors had engaged that gentleman, and given after very great consideration and investigation, because it was of the most vital importance to this company to have a man of great ability and honesty, and great experience to manage such an affair as this company, where they were returning nearly half a million sterling a year. The directors had every reason to believe that Mr. Rickard was the man they had been looking for, and he believed the shareholders would also shortly have reason to see that in Mr. Rickard they had the right man in the right place. (Cheers.) He might mention that the communication which had been received from Mr. Rickard confirmed in the most convincing manner all that the directors had been depending upon. Mr. Probert had remained at the mine to see the things which he had initiated carried to perfection under his own superintendence, and the directors were glad that he had done so, because the man who had the burden and heat of the day should also have the honour of victory. And Mr. Probert had every reason to believe that Mr. Probert's want of practical mining experience and knowledge. He only wished that every mining manager possessed one-tenth of the knowledge Mr. Probert had. Some time ago he (the Chairman) had a conversation with the representative of Wells, Fargo, and Co., the largest banking and carrying house in America, who said that the Richmond Company had the reputation in America of being the best managed company there. (Cheers.) So much for the past; now as to the future. A great many statements had been made by different persons that the shareholders were very wrong to suppose that this was a permanent mine, that it was the limestone formation, and that no mine in the limestone formation was ever known to be permanent. Now, of course, if the company had not got a permanent mine it was a serious matter; but Mr. Probert, when he made his admirable statement to the shareholders when he was in this country, stated distinctly that many of the best and longest lasting mines in the world had existed for centuries in the limestone formation. It was a great mistake to imagine that because it was in the limestone, therefore they had a permanent mine. With the view of showing the permanency of the mine, he would state to the shareholders the exact position. He told them at the last meeting that the Richmond shaft, which was sinking in limestone outside the ore, was being carried down for the purpose of further deepening the mine; he had at the last meeting to tell them that in the shaft at the depth of 200 ft. they had started a drift at random with the hope of striking ore at some advanced portion of the lode. Well, at 200 ft. from the Richmond shaft they struck ore, and commenced a winze which had gone down 70 ft. in ore, and was 4 ft. wide, and the ore was the best and most homogeneous ore which had yet been met with, and the average yield was an amount of nearly 5000 tons a week. At the next 100 ft. in depth in the shaft they started another drift, which also struck the lode, and here it was 70 ft. wide. They had gone down another 100 ft., and started another drift; they had not struck the lode there yet, but they were going down in the winze which was between 200 and 300 ft. deep in solid ore. As a matter of fact the ore increased in width as it went down. It was really something almost fabulous in its results. But that was not the only reserve they had got. They had been taking out but very little of the new ore, only about 25 per cent., and mixing it because it was very rich in lead with the old ore. They must bear in mind that the advanced portion of the lode, that which was conclusively proved to be part of the Richmond lode, was struck at about 300 ft. from the point to which they had been carrying down the original ledge, and there was a very large interval still remaining to be explored, and which the directors had no doubt would be found to consist of the same ore, and of probably the same thickness, but, of course, they could not tell that with any certainty; at any rate, there was a proved reserve of this enormous capacity, and a problematical reserve of great capacity, and there were also large reserves in the upper chambers. When the representative of the European Mine went to the Richmond Mine he told Mr. Probert that he believed there were two years' reserves in that portion of the mine alone, which would amount to about 60,000 tons. Since that date only about 18,000 tons had been taken out, so there was still a large mass of reserves in the first chambers. Therefore, he thought that the shareholders need not be under any apprehension as to the permanency of the mine, for there was no doubt it would last their time, and what came afterwards concerned posterity. He believed that if there was a permanent mine in the world this company possessed it, and he hoped the shareholders would bear this fact in mind. (Cheers.) Some gentleman had endeavoured to alarm the shareholders with respect to the difficulties of mining by saying that they could not see beyond the pick's point. There was not the slightest doubt but that it was quite true that in mining operations there were many things which they could not foresee, especially in narrow veins, and, therefore, it had become a proverb that in narrow veins they should not calculate upon anything beyond what they could feel; but they must bear in mind that in the Richmond Mine the pick had gone in hundreds of feet below where they were now getting ore, and the ore was found in still greater depth; and, although they could not actually see into the bowels of the earth there was every reason to believe that the lode was continuous, that they had a real fissure vein, and not mere pockets of ore, and that the mine had, as he had stated, all the elements of permanency about it. (Loud cheers.) He alluded to the extraordinary success and prosperity of the neighbouring Comstock lode, and said that, although they could scarcely hope to rival that mine in success, still there was the most convincing evidence that there was a career of very great prosperity before the Richmond Company. (Cheers.) He did not know that he had troubled the shareholders by referring to the accounts—the present form of the accounts had been adopted after great consideration, the great object being to show exactly how they stood, and the sources of expenditure, and also to enable the shareholders to contrast one year with another. The accounts had been sifted and analysed, and criticised in every possible way before they were sent to the shareholders, because the directors wished to keep up the reputation of furnishing to the shareholders an exact statement of their affairs, so that they might calculate exactly how they stood, and also judge what the prospects were for the future. (Cheers.) He referred to the statements which had been circulated amongst the shareholders from time to time, and which were scarcely worthy of notice, because shareholders and directors were perfectly satisfied that the mine would shake itself free from such calumnies and falsehoods. But there was one particular statement in last week's Mining Journal which went rather beyond the ordinary limits of fair criticism, and which, no doubt, many shareholders had seen. It was signed "Another Shareholder," and indulged in untrue statements, and in insidious suggestions, and unworthy insinuations, and it would have been more manly if the writer had signed his name, instead of casting dirt at his fellow-miners, and then sheltering himself under the designation of "Another Shareholder." (Loud cheers.) The anonymous writer had stated that he would come to the meeting and put certain questions; he could only hope the gentleman was present, for if he were the directors would be only too happy to answer him, because he (the Chairman) was of opinion that the honour of those who were appointed as the trustees of the shareholders, to watch over their interests should be, like Caesar's wife, "beyond suspicion." (Cheers.) If the person who signed himself "Another Shareholder" would come forward the directors would be happy to answer any questions he might put.

A SHAREHOLDER. You will have to wait a long time. (A laugh.)

The CHAIRMAN went on to say that if the person who wrote that letter was not present to day, according to promise, he had, he considered, done a most cowardly thing. (Loud cheers.) He went on to point out how absurd it was for interested people to go about saying that because some American mines had failed therefore the Richmond Mines must fail. Some shareholders had suggested to the directors the desirability of taking steps against some of the persons who had been promulgating such statements, but the directors had thought it best to treat them with utter contempt, being conscious of their own integrity, and being certain also that in the end the mine would show how utterly false such statements had been. (Loud cheers.) In conclusion the Chairman moved the adoption of the report and accounts.

Mr. HOPKINS seconded the adoption of the report, and said that the half-yearly accounts were a noble testimony to the efforts of Mr. Probert. He would only refer to one matter taken in hand by that gentleman—the question of assaying. When Mr. Probert arrived out there he found that they were not getting the full value of the bullion. They used to make their own assay at Eureka, and when the bullion

went to New York they always attended to the assay, and when they came back they found that they were not getting the full value of the bullion. They used to make their own assay at Eureka, and when the bullion

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went to New York a large deduction had to be made, and they had no remedy but to submit. Mr. Probert took that matter in hand thoroughly, and at first the New York refiners laughed at the little assayer of the rocky mountains, but he brought them to their senses.

In verification of this he would call their assays taken without question. In verification of this he would call their assays taken without question. In verification of this he would call their attention to the fact that the bullion in hand at the end of the last six months was estimated to realize according to Mr. Probert's assays, \$208,800, and it actually realized \$219,680, being \$880 more than the estimate.

Mr. WALKER asked if it were intended to increase the number of furnaces?

MR. LEOPOLD HEATH asked how much of the item of \$7790 was for commission, and how much for interest to bullion agents.

The CHAIRMAN replied that he believed the commission stood at 1½ per cent., and that the balance would, therefore, represent interest. The average balance over that which he had been paid, and about the end of June that item would disappear.

Mr. MYERS was mollified, and about the end of June that item would disappear.

Dr. BISHOP drew attention to the statement in the report to the effect that "the directors have made arrangements, on favourable terms, for the exclusive right of using in the State of Nevada the patent process of Messrs. Luce, Fild, and Rozan, for refining and deilverising bullion." He would like to know some thing about those arrangements.

The CHAIRMAN stated that the arrangement made with the patentee was that they should pay a fixed sum per annum for the right of using the patent for the State of Nevada. They had also got the probability of a return of the whole of their payments, on the ground that in the patent granted for the rest of America a certain proportion was to come back to the company, and he believed from that source alone that they would stand quite free from any royalties before long.

Dr. BISHOP would like to make a few observations on the report, and in common with every other shareholder, he had done his duty to this property, and his reasonable account. He had been to the property three or four times, and his remarks always had been, when people had come to him, and said it was a pocket mine, that he wished he had two or three such pocket mines. (Hear, hear.)

He had as full confidence as the Chairman had that this was a true fissure vein, and he believed when they received another report from Mr. Clarence King that it would confirm what was said before. He (the speaker) had the greatest faith and confidence in the mine, and they could not do better than put the greatest faith in Mr. Probert, which he hoped would result in some practical form.

Every member of the board had done his duty to this property, and had attended to the business of the mine most closely. (Hear, hear.) He had had the charge to the business of the mine on the Pacific Coast, and he would like to draw their attention to the item of charcoal, which was necessarily an exceedingly high one. He thought by becoming his own charcoal-burner. He thought it would be well for this company to adopt such a course, as it would save, for example, what it would cost to give them a larger dividend. He believed that the world save from 15,000 to 20,000 a-year in this way by making their own charcoal. He would advise the shareholders to keep their eyes wide open, and watch the present market value. He would ask them not to listen to what people say and write in newspapers, for it was known that the greatest riches in the world had come out of the limestone formation.

Mr. BRIDGEWATER stated that he had received a private communication from Mr. Probert to the effect that the Rozan process would be of great use to the company. No doubt the expense of the charcoal was very great, but though he had seen something about the purchase of charcoal, he could not see how economy could be had said, and if it were done he could not see how economy could be achieved further. He had been in the thick of the fight from the first, and on many occasions he had seen how the Chairman and deputy-Chairman had borne themselves. He hoped somebody in the meeting would move some return to the directors. They could not vote an increase of pay on account of the Articles of Association, but they could vote a sum of money for past services. Referring to the surface acreage connected with the mine, he considered that they hardly expressed the value of what the company possessed, because the mine had surprised everybody by going down half a mile.

The CHAIRMAN referred to the question as to the number of furnaces, and stated that they had only had three going during the past year. The average had only been two furnaces, because one was usually out of blast for the purpose of repair. They had, however, now sent out the materials for an iron-jacketed furnace—viz., a furnace with a water-jacket round it, which would last certainly from 12 to 18 months without repair, and which, although of smaller size than the old furnaces, they expected would be more advantageous.

A charge had originally been made to the effect that the mine too fast, but the mine out of its own ore was producing a great deal more than they could smelt. A charge had originally been made to the effect that they had not sufficient lead to work the ore they had, and that they were consequently putting lead into the furnace at the time without having the proper fuel. When they got the litharge out of the refining works. He believed that the next telegram they received would state that they had got four furnaces at work. With regard to Dr. Bishop's remarks, they had been anticipated by him from the commencement of the company. He foresaw in a short period as Eureka that the area for the supply of charcoal was being gradually expanding as they cleared out the woodlands round the town, and the railway concession came almost at the time when he was asked to join the board. He was then most urgent that those who had the principal interest in the mine should take this question up, for he then saw the importance of getting a railway up to the works in order to reduce the expenses by bringing in coal. This had now been the case, and was the reason why they had been enabled to make such a short interval between shut-down and re-opening. They had taken the precaution of ordering coke, and it had supplied the supply of charcoal, and therefore the question of making their own charcoaled was not now of much importance to the company as it formerly was, for the introduction of coke into the furnace would burn coke only, and they hoped by the introduction of coke not to require the large supply of charcoal they used formerly.

Mr. Probert had also made favourable arrangements with the charcoal burners for the supply of charcoal for this season. Mr. Clarence King had drawn attention to the vast importance of the railway for the management of the company, and said that the effect would be to reduce by two-thirds the cost of the fuel. They paid about 80,000 a year for fuel, and if they could have 40,000, it would be a great accession to the profits of the company. They had had the matter under consideration for some time, but they had not brought it before the shareholders until they felt they could pay nothing more. Their opinion was that the future would be set right by the shareholders requesting the board to take the necessary steps to alter the Articles by increasing the minimum to 1000, and the maximum to 2000. He thought that the sum put in the Articles of Association was just as absurd as the fees he had heard of being paid in some companies where each director received 500, and the shareholders got nothing. His idea was that the Chairman of a company like this should have 500 a year.

Mr. A. PULBROOK begged to move that the directors should be requested to alter the Articles, as Mr. Hopkins had mentioned. He considered the suggestion was a very reasonable one. As to the amount of the dividend, he thought that the directors would not be called upon to increase it until they had sufficient capital in hand to provide for conveniences. He asked them to look at the results of the operations of other companies declaring large dividends, and yet borrowing money, and allowing the Americans to get the mines into their own hands. He considered that 20 per cent. was quite sufficient, and hoped that they would go on increasing the working capital in the future to provide against any emergency.

Mr. MILLIS said that the first part of what Mr. Pulbrook had said, but not with the second. He thought, however, that such a motion would not be in order; and expression of opinion would be sufficient, and on the next occasion a resolution to effect this change must be brought forward.

Mr. HOPKINS explained that the Articles of Association could not be altered except with the sanction of a special meeting. He only wished an expression of opinion on the part of the shareholders; of course, the directors would make no alteration unless the feeling was unanimous.

Mr. PULBROOK suggested the mode of procedure at meetings, and his motion was only for the purpose of clearing away any delicacy of feeling which the directors would have in convening such a meeting.

Mr. BRIDGEWATER would move that a petition should be signed by a number of shareholders, requesting that a meeting be convened to consider the desirability of altering the Articles of Association as regards the remuneration of the directors.

Mr. PULBROOK then put his motion in the following form:—"That in the opinion of the members assembled at this meeting it is desirable that the remuneration of the directors for past as well as future services should be increased, and that at the next half-yearly meeting be requested to include in the notice convening the meeting the necessary alteration for that purpose."—MR. WALKER carried this resolution, which was put to the meeting, and carried.

Mr. HOPKINS said that with reference to the letter alluded to, which had appeared in the Mining Journal, it did not refer to Mr. Probert so much as to the whole board. It was the directors who supervised the affairs of the company. For himself, he would only say that he had never sold a single share, and he now owned nearly 1000 shares. Mr. Broughton never sold a share from the first. The Chairman had imputed his holding by degrees until he was now a very large holder, and both Mr. Bower and Mr. Schultz had done the same. He protested against this anonymous sneak accusing the whole board in the way he had done in the columns of the Mining Journal. (Hear, hear.) He was sorry that this shareholders

Did not come forward, as he stated he would do in his letter, and point out any one thing they had had to resort to in order to rig the market, as he styled it, for if they were found out, it would be their ruin. It was the Richmond board.

Mr. WALKER said that there was another letter in the *Mining Journal*, saying that the company had encroached on another man's ground. Was this really the case?—The CHAIRMAN said it was not the case. This person had threatened proceedings, but they were advised that he had not the shadow of a claim. He had not commenced an action against the company; it was simply a myth, and the man had been attempting from the beginning to blackmail the company.

Mr. HOPKINS said that these letters appeared nearly every week in the *Mining Journal*, and asked if the man who wrote them was a shareholder or not.

Mr. WALKER supposed that the *Mining Journal* could be compelled to give the name of this anonymous correspondent. He thought they should demand the name, and if the newspaper would not give it that they should take legal proceedings. (Hear, hear.)

Mr. HOPKINS said it was an insult to Mr. Probert and the shareholders that the *Mining Journal* should publish such letters. (Hear, hear.)

Mr. WALKER moved "That the name of the writer of this letter be demanded from the *Mining Journal*, and, if not given, that legal proceedings be taken."

A SHAREHOLDER considered that too much consideration had been given to the matter.

The CHAIRMAN hoped they would leave the matter in the hands of the directors.

Mr. BRIDGEWATER believed that they would find themselves in a difficulty if they demanded this from the *Mining Journal*.

Mr. PULBROOK thought they ought not to pay any attention to people who wrote in this way, and who did not attend the meeting. He would suggest that the directors should send a list of the shareholders of the company to the *Mining Journal*, and ask if the man who wrote the letters was a shareholder or not of the company. If he were not they might then be disposed to give his name. (Hear, hear.) He begged to move that the matter be left in the hands of the board.

Dr. BISHOP seconded the resolution, which was put to the meeting, and carried by a large majority.

Votes of thanks were then proposed to the Chairman and directors, to Mr. Probert, and to Mr. Corrigan, after which the meeting separated.

### VANCOUVER COAL MINING AND LAND COMPANY.

An annual general meeting of shareholders was held at the City Terminus Hotel, Cannon-street, on Thursday.

The Hon. C. W. FITZWILLIAM, M.P., in the chair.

Mr. SAMUEL M. ROBINS (the secretary) read the notice convening the meeting. The report of the directors was as follows:—

The directors herewith submit the accounts for the six months ending Dec. 31, 1874, the profits for which amount to 233L 18s. 6d. This sum, added to the balance brought forward from the last half year, leaves for disposal 3528L. The quantity of coal shipped and sold amounted to 13,283 tons, and the output to 22,175 tons.

From Douglas Seam (Mainland) .....	Tons	16,210
From Lower Seam (Mainland) .....		1,582
From Fitzwilliam Mine (Newcastle Island) .....		4,403=22,175 tons

The output has been much restricted and the cost of production greatly increased owing to the works having been prosecuted in Thin coal in the upper levels, pending the clearing of the No. 4 level. The driving of the No. 5 level was also a costly undertaking, the whole outlay upon which has been charged against revenue, thus further reducing the available balance.

MIXING ON THE MAINLAND.—Douglas Mine: During the half-year the operation of recovering the No. 4 level was frequently interrupted by bad ventilation, but by advices from Newcastle, dated March 11, the directors were informed that the level was of length cleared of debris. It is proposed to extend this level with a view to opening out the field in that direction. The No. 5 level was pushed on vigorously, and so far it has fully confirmed the expectations of the managers. It will open out a large area of coal to the dip of former workings.—Park Head Adit Level: In order to drain the surface water that more or less has always found its way into the pit, a level is being driven from the beach to connect with the No. 1 level at a point near the Douglas shaft. This work will shortly be completed, and will materially relieve the pumping engine during the winter months.—Lower Seam Exploration and the output of the Lower Seam, so far as it has been at present explored, is not very encouraging. Only a small quantity of coal was produced in the six months, the seam having been irregular and the quality variable. The last advices, however, report some improvement.

MIXING ON NEWCASTLE ISLAND.—Fitzwilliam Mine: In the East Heading, started from the Main Slope, at a point a short distance above the "want," the coal was followed a distance of 130 yards. Since Dec. 31 a "fault" has been struck in this heading which was at first supposed to be identical with the "want" in the slope, but Mr. Rydals has since ascertained that it is not. We have now driven in the coal for a distance of about 30 feet beyond the "fault," and find the coal good, with every appearance of it continuing for some distance. The seam is about 5 ft. 9 in. thick, with about 15 in. of soft shale between the top and bottom coals, so that the thickness of coal is about 4½ ft. The dividing stone between the top and bottom coal is thicker here than in some parts of the mine, but I have no doubt but that it will become less as we get away from the "fault." I think there is now every reason to suppose that the "want" has been passed, and that we have at last entered upon a clear run of coal. Until this heading has penetrated the coal to a greater extent the directors cannot justify the present favourable indications, but they are justified in stating positively that all difficulties have been overcome.—Newcastle Mine: No work was done at this mine during the six months. With several important explorations in progress, and the number of miners limited, nothing will be at present attempted here.

DOUGLAS SEAM EXPLORATION NEAR CHASE RIVER.—An opening near the outcrop of the Douglas Seam, about a mile south of the Douglas Pit Workings, was commenced early last month. A telegram from San Francisco was received on April 24 to the following effect:—"Douglas coal 4 ft. 6 in.; new opening near Chase River." In the absence of written details the directors are unable to say what importance can be attached to this discovery.—Diamond Boring Machinery: The boring machinery was shipped in February, and should reach Nanaimo in June or early in July. The engineer who will superintend the boring is on his way to Nanaimo. Encouraging accounts continue to be received of the work done by the Diamond borer in various places.—Railway from Esquimalt to Nanaimo: The intention of the Government of the Dominion of Canada to construct a line of railway between Esquimalt and Nanaimo has caused a demand for the company's town lots. For the six months 3572 was received for land sold, and during the current half-year this amount will be exceeded.—Incorporation of Nanaimo: On Dec. 24 the town of Nanaimo was created a Municipality under Letters Patent. and Mr. Mark Bates, one of the company's managers, has since been elected mayor. The directors recommend that a dividend be declared for the half-year at the rate of 10 per cent. per annum, and they propose to take 602L from the reserve fund to make up the necessary amount. The directors consider that the satisfactory prospects of the company justify them in making this recommendation. In the Articles of Association, the retiring directors are Mr. Joseph Ery and Mr. Edward J. Woodhouse, who, being eligible, offer themselves for re-election Messrs. Hill and Lovelock, the retiring auditors, offer themselves for re-election.

The CHAIRMAN said he thought he might safely congratulate the shareholders upon the prosperous condition of their property; the returns of coal shipped and sold should make them perfectly contented with the business they were embarked in, although the output had been much restricted, and the cost of production greatly increased, owing to the works having been prosecuted in Thin coal in the upper levels, pending the clearing of the No. 4 level. The driving of the No. 5 level was also a costly undertaking, the whole outlay upon which had been charged against revenue, thus further reducing the available balance. Luckily, they had a reserve fund upon which occasionally they could trench, and he hoped that shareholders would be content to allow them to trench upon that fund so as to equalise the dividends as in former years; that, however, was a matter which would come on later, and he hoped the resolution proposed would be unanimously adopted. During the half-year the operation of recovering the No. 4 level was often interrupted by bad ventilation, but by advices from Nanaimo, dated March 11, the directors were informed the level was cleared of debris; it was proposed to extend this level with a view to opening out the field in that direction. The No. 5 level was pushed on vigorously, and so far it had fully confirmed the expectations of the managers. It would open out a large area of coal to the dip of former workings. In order to drain the surface water that, more or less, had always found its way into the pit, a level was being driven from the beach to connect with the No. 1 level at a point near the Douglas shaft; this work would be shortly completed, and would materially relieve the pumping-engine during the winter months. The character of the lower seam, so far as it has been at present explored, was not very encouraging. Only a small quantity of coal was produced in the six months, the seam having been irregular, and the quality variable. The last advices, however, report some improvement. In the Fitzwilliam Mine he hoped they had in the main got through their difficulties, and that they would not encounter any further faults. At the Newcastle Mine no work had been done during the six months; with several important explorations in progress, and the number of miners limited, nothing would be at present attempted at this mine. A great expense had been incurred, and which it was hoped would produce great results in the purchase of diamond boring machinery; they had lately heard from the agent sent out in charge that he had arrived at San Francisco, and would shortly proceed to Nanaimo. The projected interoceanic railway had greatly increased the value of the property; reports had been received of rapid sales of land, and from appearances people were inclined to invest in that property. Nanaimo had been incorporated and was now a municipality, and the first mayor was one of their respected managers, Mr. Mark Bates; in a letter sent to the board he states that he felt it his duty to protect the interests of the company, and could not better do so than by contesting for the office of mayor, in which he had been successful. The directors were about to recommend a dividend at the rate of about 10 per cent. per annum, as in former years; this would absorb 4130L, and to make up this sum they had taken 602L from the reserve fund. By the Articles of Association they had full power to do that, as the reserve fund was set apart for many things, one being the equalisation of dividends. They thought that the shareholders would not consider a rash step had been taken considering the pro-

perous state in which the property now stood. He then moved that the report and accounts be received and adopted.

Mr. GALLSWORTHY seconded the proposition.

Mr. HILL asked what quantity of land was unsold?—Mr. JOHN WILD (a director) said that seven-eighths were unsold.

Mr. SKINNER understood that the railway had been stopped.

Mr. WILD said it was going on independently of the vote of the Legislature.

Mr. SKINNER asked if this company had subscribed anything towards the railway?

Mr. WILD replied in the negative, adding that it was entirely a question with the London Committee and the Hongkong & Shanghai properties.

Mr. TENDRON congratulated the board upon the policy of maintaining the dividend at an equal rate. The board were fully justified in the course adopted in entrenching upon the reserve fund, because the present circumstances were altogether exceptional. They had earned a large amount, although shut off from the principal coal field.

The report and accounts were then received and adopted unanimously.

Mr. TENDRON proposed that a dividend be declared at the rate of 10 per cent. per annum, and suggested that Mr. Wild should make his accustomed statement as to the position and prospects of the company's properties.

Mr. WILD, to place himself in error, seconded the proposition for the declaration of the dividend. He did not know that he could add much to the information conveyed in the report. The board had forewarned in their report that there was really an era of success before the company after four bad half years of depression, during which they had trespassed on the reserve fund, but he hoped they were now at the commencement of an era of success, and that they would not only be able to pay that amount back to the reserve fund, but also increase that fund. He did not consider the work of Mr. Bryden had spoken of in the Fitzwilliam Mine with great confidence; it was for that reason—because they believed in his caution—that they had printed his words in italics in the report, as follows:—“We have now driven in the coal for a distance of about 30 ft. beyond the fault, and find the coal good, with every appearance of it continuing for some distance. The seam is about 5 ft. 9 in. thick, with about 15 in. of soft shale between the top and bottom coals, so that the thickness of coal is about  $\frac{1}{4}$  ft. The dividing stone between the top and bottom coal is thicker here than in some parts of the mine, but I have no doubt it will become less as we get away from the fault. I think that no one is so stupid as to suppose that the want has been passed, and that we have at last entered upon a clear field of coal.” It had already been noticed that a telegram had been received denoting that they were likely to have another undertaking. He might mention that it was a part of the field not yet explored, and for that country the coal was of a most extraordinary thickness—8 ft. 6 in. The managers considered themselves justified in telegraphing the intelligence, and they should certainly set to work to develop it as fast as possible. Therefore, with all these prospects before them, the directors were perfectly justified in maintaining the 10 per cent. dividend. He did not think that the company was likely to be so much in want of profits as capital. That might appear strange, after the various discussions which had taken place with regard to a return of the capital; but unless they sent a greater production to market, and at a lower price, they would probably find they would not work so successfully as they ought to do. A few years ago they complained of being burdened with 10,000*l.* capital; in the first of the four bad half years they had in hand and in coal, 27,000*l.*; whereas to-day showed only 19,000*l.*, a difference of between 8000*l.* and 9000*l.*, which they had sent to the London Committee. He did not put upon the new shareholders. Now they had got this new place they would certainly want money to develop it; but if they found they could get on without that they, of course, would not make any stir about requiring any more capital, although he certainly thought it would be judicious of them to make a larger investment of capital while the colony was floating on the tide of success.

A SHAREHOLDER asked if the estimate of 165,000 tons referred to the two levels?

Mr. WILD said that the No. 5 level would command 165,000 tons, and the No. 4 level 70,000 tons.

Mr. TENDRON asked if that was independent of the new discovery?

Mr. WILD replied in the affirmative. As to the price realised for the land, he mentioned that so no plots on account of their site had realised quite a fancy price, but others had been sold at a less rate—the valuation in the books of the company was only 20*l.* per acre.

Mr. WILD, in reply to other questions, said that the old mine had never been in a more prosperous condition than now, and if it did not continue to yield largely without adding to its capital cost it was not the mine he considered it was.

The motion regarding the dividend was carried out and carried unanimously.

Capt. VAILE proposed the re-election of the retiring directors, which was seconded by Mr. Young, and put and carried unanimously.

Messrs. Hill and Lovelock were re-elected auditors.

A vote of thanks was passed to the Chairman and directors for their successful conduct of the company's affairs.

Mr. SKINNER proposed that the best thanks of the shareholders be accorded to Mr. Robins, the secretary, and also to Messrs. Bryden and Bate, the managers.

Mr. TENDRON said that in putting up the new shafts, the directors, who were under great obligations to Mr. Robins, the secretary, who was indefatigable in his endeavours to promote the interests of the company. He also had much pleasure in seconding the proposition for thanking the officers in the colony, being fully satisfied that the company's interests were there well looked after. (Hear, hear.)

The meeting then separated.

### LITTLEDEAN WOODSIDE COAL COMPANY.

The annual general meeting of the shareholders was held on Wednesday, at the Town Hall, Cinderford, near Newnham.—Mr. EDWIN CRAWSHAY in the chair. Mr. JOHNS (the secretary), having read the notice convening the meeting, the CHAIRMAN, in presenting the accounts for the year, reported that the profits for the 12 months amounted to 1246*l.* 14*s.* 7*d.*, being nearly 8 per cent. on the paid-up capital, but it had been absolutely necessary to spend 1600*l.* in the further development of the property, and as the unpaid shares had not been applied the entire revenue of the company had to be appropriated towards this expenditure, thereby causing a cessation of dividends. The Chairman reported favourably on the progress made in sinking for the new breadth of coal, which it was expected would be reached about February next, and regretted that until that was done no dividend could be reasonably looked for, as it was impossible to develop the property and pay dividends out of profit only. Mr. Jonathan Perran, the retiring director, was re-elected. It was resolved that the future meetings of the company should be held half-yearly. A vote of thanks to the Chairman and directors terminated the proceedings.

### PESTARENA UNITED GOLD MINING COMPANY.

A general meeting of shareholders was held at the offices, Queen-street-place, on Tuesday.—Dr. F. F. QUIN in the chair.

Mr. W. H. ROWSE (the secretary) read the notice convening the meeting. The reports and balance-sheet (which appeared in last week's Journal) were taken as read.

The CHAIRMAN said the reports and accounts having been in the hands of the shareholders some days sufficient opportunity had been afforded of examining them thoroughly, so that very few remarks were needed from him, especially considering the reports were very ample, and almost exhaustive. Their managers were present to meet any deficiency there might be, and the observations he might make would be supplemented by them as to the state of the mines. During 1874 there had been a loss of 1681*l.*; this had been overshadowed at the last meeting by Prof. Smith, who then filled the chair, he (Dr. Quin) having been unfortunately prevented from doing so by ill health. This loss, however, arose from the fact that their operations had been confined to exploratory works. The gold sales had realised 3122*l.*, which had been derived from ore in stock in September, 1873, and also from ore raised between September and January, 1874; at present no ore was being raised, owing to the cost of transport, nor would there be until a cheaper mode of carriage had been established, or richer ore discovered. The managers had a plan for a cheaper mode of transport, but the financial position of the company had not warranted the directors in proceeding with its construction. The machinery at Val Toppa had given great satisfaction, and in the Cani Mines tolerably good ores had again been discovered, but they were difficult and expensive to treat. Experiments had been made to determine whether these ores could not be treated in a more satisfactory way, and had been successful upon a small scale. There had been expended on construction account 6932*l.* on works recommended in 1872. This outlay had been principally incurred at Pestarena, where the incline shaft had been sinking, by which the ore would be more economically raised; that shaft will be down to the 65 this month, and by September (they were informed by their agent) it would be down to the 80—the present bottom of the mine. This important work had been pushed on by their superintendent and mining engineers with great zeal and energy; and although it had been sunk with considerable danger to the workmen—the sinking having had to be carried through what was known as *morain*; luckily no lives were lost, although there was great peril to the workmen engaged. The machinery for hauling and milling was very near completion, and would be ready by the time the shaft was down. The finances had caused great anxiety during the last six months; the appeal made by Professor Smith to the shareholders at the last meeting having, unfortunately, not been responded to, and the example set by the directors and several of their friends not having been followed, nothing remained to the directors but to en-



deavour to negotiate a loan upon the property of the company, and the steps taken had been fully set forth in the report. Since then the directors had had an opportunity of having several interviews with Mr. Franzi, who still continued very sanguine as to the carrying of the negotiations to a successful conclusion. In the meantime the funds necessary to carry on and pay the monthly cost were being supplied by Mr. Franzi, who drew upon the company as the funds were required. Mr. Franzi, it was but justice to say, had exerted great zeal and energy in the company's interest, and displayed great tact and judgment in his negotiations for the loan. The amount the directors required in order to pay off the liabilities and complete the works was 15,000*l.* The general meeting was held last year in April, and the directors were hopeful that they would have been able to call this meeting earlier, but it had been delayed in consequence of their anxiety to be able to announce that the loan had been completed. This, he was sorry to say, they were unable yet to do, but by letters received this morning there was every hope they would soon be able to announce it. The amount received from the issue of 6250 preferential shares had been 18,750*l.*, less arrears 232*l.*, leaving 18,518*l.* With this the directors had paid off old debts and liabilities, amounting to 7915*l.*, leaving 10,603*l.* The new works it was calculated would be completed for or about the amount estimated, after making allowance for increased cost of machinery, materials, and labour. The amount already expended had been 19,136*l.*, and the further amount to be expended was 4000*l.*, making 23,136*l.*, which was somewhat short of the sum originally proposed should be raised in order to complete the works. Deducting for increased price of materials and labour 50 per cent. on the 15,000*l.* would bring down the amount by 7500*l.*, those shareholders conversant with the increased price of iron, coal, and labour would not be surprised at this large percentage of increase—that of iron having been 75 per cent. and labour 36 per cent. To enable the shareholders in some way to judge that this statement of increased expenditure was not exaggerated, he might mention that they used to pay for mercury 6 to 7 *frs.* per kilogramme, but latterly the price had been 23 to 24 *frs.* He then moved that the reports and balance-sheet be received and adopted.—Col. PERCIVAL seconded the proposition, which was unanimously adopted.

Mr. FUSSELL enquired the estimated produce of gold per ton of ore from the deep workings when the 12 mills would be complete, and what further opportunity there was of increasing that number? He should also like to know, if it were proposed to concentrate the Pestarena ore, how many tons per day would be put through each mill? He was very glad indeed the present mode of procedure was now being adopted, because it was precisely that which he had always advocated. The last time he met Chevalier Francfort on the property he very strongly urged him to put up a mill at Pestarena, offering to pay the whole of the expense at once, but Chevalier Francfort declined the offer, but he (Mr. Fussell) was very glad indeed to find it was now being done.

Mr. RICHARD TAYLOR, in reply as to the rate of produce expected from the ores from the deep workings in the Pestarena Mines, could only refer them to the experience of the past—experience before Messrs. John Taylor and Sons had anything to do with the mines, because from that time there had been no ore raised from the Pestarena Mines proper. It was well known, he believed, Pestarena did produce ores averaging 15 to 16 dwts. of gold per ton during the last two years they were worked. The ore was exceptionally high in produce, and capable of being worked to great advantage by a process established by Chevalier Francfort—an exceedingly good process; he (Mr. Taylor) thought there was nothing superior for ores not containing much arsenical pyrites, ores in which the gold was found in the ordinary pyrites (sulphurets of iron mixed with quartz) which were easily and well treated in the Francfort amalgamation mills. They hoped, therefore, that something like the average produce would be obtained which was realised during the last two years working of these mines. When first consulted by the directors, Messrs. John Taylor and Sons sent, in the first instance, his (Mr. R. Taylor's) report to inspect the property, and it was upon his report that their firm decided upon accepting the management. He (Mr. Taylor) then went to the mines, and by great efforts the water was kept drained to the deepest point, in order to afford him an opportunity of examination. In the deepest point, in an under-hand stop, he himself broke various specimens of ore, all of them rich, and containing above 3 ozs. of gold per ton, and one 7 ozs.—that was a clean specimen of auriferous pyrites, without quartz or any other mixture. The size of the vein was satisfactory (3 to 3½ ft.), and regular and well characterised. It gave him a very strong hope that when properly worked it might prove of very great advantage. The cost had been enormous of bringing the ore to surface—drawn up by hand, and carried along a succession of levels, so that before it was unloaded at the surface a great part of its value had been eaten up. To remedy that they decided upon sinking an inclined shaft from surface at an angle of about 45°, that proved a much more difficult and dangerous operation than expected, having to pass through *morain*, an enormous deposit of loose gravel from the higher Alps, containing blocks of granite. To carry down this inclined shaft through such a formation was a very difficult operation. When these great boulders of granite were reached they had to be blasted through, while at the same time the surrounding ground had to be supported, and their agents deserved fully the credit the Chairman had given them, for great perseverance, zeal, and skill as miners had been displayed by Capt. Roberts and his subordinates. The work had been exceedingly well done; the sinking had been continued to the solid granite, and they had now nearly reached a depth of 65 fathoms, having still to sink to the 80, which Capt. Roberts assured them would be accomplished by the middle or end of September. Several of the other works projected had progressed satisfactorily, and that those he saw of them the more he was convinced that if these mines were to be profitably worked the means adopted were the best that could be designed. An excellent drawing machine was worked by water-power, hauling the stuff in tram-wagons, and there was room in the shaft for pumps; he felt confident the mine would be placed in a condition to be worked as economically and effectually as possible. There was the still larger mine of Aquavite, from which considerable produce was derived, and the levels being driven from Pestarena will afford to Aquavite the advantages to be derived from tin boulders of granite which would be worked by one system of machinery, but when the ore had been brought to surface another difficulty was met with in regard to its transport to the very fine establishment at Battiglio, where the reduction works had been placed. It had been proposed to reduce the cost of carriage by a wire-rope way, but that did not end satisfactorily, and the manager had thought it much wiser to have no carriage at all by establishing reduction works at the mouth of the shaft. It was true they would not be able to work all the year round, but they would work a sufficient number of months to extract the gold from all the ore raised in the entire year. The reduction works were well placed, and he added that the united judgment of Mr. Harvey, Mr. Rowe, and Captain Roberts. The necessary machinery was all on the spot, and the greater part erected; six of the mills were ready to work, and the remaining six would be ready before the winter. As to the power of increasing the number that was almost unlimited, the number of mills could be increased as occasion for them arose, but 12 mills would do a great deal of work. He had not much data as to the duty of each mill, but he believed about ½ ton per day was the estimate. If the Pestarena ores yielded as well as they had been led to be no necessity for generalising as to the duty of each mill. At Canal operations had been confined to driving the adit level and exploring the new ground. Some small deposits of ore had been met with rather superior in quality to the general run of that mine. The large quantity of ore stated to be there remained as before, but there was still the difficult question, could they be treated advantageously? The gold occurred in the arsenical pyrites, as distinguished from the ores of Pestarena and Val Toppa, and the effect of that difference in the mineral was that there was a very heavy cost by the loss of mercury. Laboratory experiments were being made, and probably some plan would be hit upon to avoid this serious loss; they had before them more than one plan besides that of chlorination, and if those ores could be treated without mercury Cani might be worked to a great profit. At Val Toppa nothing had been done but continuing explorations in search of fresh deposits, leaving the great reserve—computed at 30,000 tons—of low-class ore as before; these ores were said to contain 5 to 6 dwts. per ton, and gold ore containing only 3 dwts. per ton could be worked, it was said, to pay, and 5 dwts. could be worked very profitably. The mode proposed by the late superintendent, Mr. Harvey, had been sufficiently tested to give some reliable results; it was the process generally used in the quartz mines of Australia, and collecting in blankets the sand that resulted from the stamping. Mr. Harvey had been good enough to send a report on the experiments, which had been made up to the time of his leaving the company's service, particulars of which, with those of subsequent experiments made by Capt. Roberts, are contained in a tabular statement annexed to the reports. In 1870 Mr. Le Neve Foster reported the extraction to be 76½ per cent., and in 1871 78½ per cent. of the gold contents of the ore were obtained; in 1872, after Messrs. John Taylor and Sons became connected with the company—although they could take no credit to themselves for the improvement—82 per cent. was obtained, and in 1873 no less than 83 per cent., which he believed would compare favourably with any gold extraction in the world. It was found the average extraction was 73 per cent. by the stamping and subsequent milling; and in the last trial, at which he (Mr. Taylor) was present, the produce was 78 per cent. of the gold contained in those low-class ores—a very satisfactory result, and one which gave very great encouragement that the Val Toppa ore could be treated profitably if the cost of transport could be reduced by some such plan as that they had successfully adopted in the Alps of Switzerland. By a judicious selection of the ores he believed it quite possible to bring the Val Toppa ores to a considerably higher "ley" than when carried on by the old means; and they had had the very gratifying intelligence to-day that Mr. Franzi had succeeded in inducing the contractors for their transport to carry at a much lower rate than before—a reduction equal to 1*s.* per ton. By a selection of the ore on the spot there was reason to believe that even with the present appliances this mine might be brought into a profitable state. The execution of the work, and the economy in conducting it, had been so carefully watched and so wisely carried out by their excellent agent, Capt. Roberts, and Mr. Rowe, their engineer, and the financial part so ably administered by Mr. Franzi and the gentleman at the head of the office there, that he (Mr. Taylor) was sure there was nothing left to be desired in that respect. The cost of the management at the works had been reduced one-half to what it was when they took the management; so also had been the London salaries, which in 1870 amounted to 1833*l.*, and in 1874 to 950*l.* But for all that they had not been able to work within their means, having been obliged to incur debt. Their excellent financial representative, Mr. Franzi, was in great hopes he would be able to obtain the necessary assistance from the bankers at Turin and Alexandria, who have—as Mr. Franzi has—the greatest confidence in the success of the concern. In the progress of these negotiations it was required that an exact statement should be furnished of the value of the property; that statement was made with the greatest possible care, and the result was the figures which gave Mr. Franzi perfect confidence in asking for a loan from his countrymen.

Mr. HILL asked the position of this company with regard to the wire tramway company?

Mr. RICHARD TAYLOR said a fresh contract was made with Mr. Hodgson for an improved line of wire-ropes, and the company were assured that very much stronger cables should be used; but it never was done, and the consequence was Mr. Hodgson failed in his contract. Steps were commenced by their solicitor with the view of recovering compensation, but it was found there was no hope of getting anything.

The report and accounts were received and adopted unanimously. Mr. John Fisher, Mr. J. E. Smith, and Mr. John Taylor were re-elected directors. Mr. Swaffield was re-elected auditor. Mr. FUSSELL, in proposing a cordial vote of thanks to the Chairman for his conduct in the chair, and to the managing and other directors, said: We must all have been pleased to hear of the improved prospects before us, and I have no doubt that the care which has already been exercised will be continued.

#### PROVIDENCE MINES.

A general meeting of adventurers was held at the mine, on Tuesday, Mr. BAMFIELD in the chair.

Mr. EDWARD TRYTHALL (the purser) read the notice convening the meeting, and the statement of accounts for the 16 weeks, showing a loss of 367*l.* 16*s.* 11*d.*, and a credit balance of 33*l.* 14*s.* 11*d.*, which was carried forward to next account. The subjoined report of the agents was submitted:—

May 13.—Higgs's Shaft: There are four men driving a cross cut south at the 105 at 6*f.* per fathom, driven from the standard lode 14 fathoms; there are now 10 fathoms more to get under the tin ground worked at in the shallower levels. There are four men driving the 85 east, on the north part of the caunter lode, at 15*f.* per fathom; this part is 5*f.* wide, of low-quality stuff. There are 6 fms. more to drive to get under the tin ground gone down below the 75. There are two men driving the 85, west of cross cut, on Hawks's lode, at 6*f.* per fathom; the lode in this end is 1*f.* wide, unproductive. There are four men driving a cross cut north at the 75 at 15*f.* per fathom, to cut Hawks's lode; there are 2 fathoms more to drive to intersect it.

Hawks's Shaft: This shaft is now being sunk below the 46, by six men, at 13*f.* per fathom, and is now 3 fathoms below the level; the lode in it is 1*f.* wide, worth 15*f.* per fathom; in this level east we have cut the flookan, and are now driving south on it, by four men, at 3*f.* per fathom; there are 10 fms. more to drive to cut the lode, which is here in that direction, as proved in the levels above; there are four men rising in the back of this level for ventilation at 3*f.* per fathom, and there are four men driving this level west at 6*f.* per fathom; here the lode is 15*f.* wide, worth 7*f.* per fathom. There are four men driving the 36 east at 9*f.* per fathom; here the lode is 1*f.* wide, worth 6*f.* per fathom. There are six men stopping the back of this level at 3*f.* per fathom; the lode is worth 8*f.* per fathom. There are four men driving this level west at 9*f.* per fathom; here the lode is 18*f.* wide, worth 8*f.* per fathom. The ground in these two ends is harder than usual, but the lode maintains its size and quality. There are four men stopping in the back of this level at 3*f.* per fathom; the lode is worth 7*f.* per fathom. The 26 is being driven west, by four men, at 5*f.* 10*s.* per fathom; the lode is 2*f.* wide, worth 6*f.* per fathom. There are four men stopping the back of this level at 4*f.* per fathom; the lode is worth 6*f.* per fathom. There are two men rising in the back of this level, east of shaft, for ventilation, at 6*f.* per fathom. There are now about 3 fms. to hole to a winze sunk below the 14. There are four men rising in back of the 14, at 5*f.* per fathom, to hole to adit; there are 6 fms. more to effect this communication, and when accomplished this part of the mine will be properly ventilated, as Higgs's shaft will make it complete to surface.

There are 14 pitches being worked by 37 men, at 16*s.* in 1*l.* tribute; set at 40*f.* per ton for the tin, and there are 74 men on tutwork, making a total of 111 men underground.

In the past 16 weeks our returns have not been quite so much as we expected, owing to a falling off in the principal tribute pitches in the south part, but they have increased from Hawks's part, and should this lode continue to open up as at present we hope to raise sufficient tin to pay cost at the present price of tin.—WM. HOLLOW, SAMUEL ROGERS.

It appeared that during the 16 weeks 15½ tons of tin was sold, realising, with 4*l.* 19*s.* 2*d.* for extra carriage, 2767*l.* 14*s.* 11*d.*, but the expenditure was for labour cost 2236*l.* 10*s.* 10*d.*; materials and coals, 899*l.* 1*s.*—3135*l.* 11*s.* 10*d.*, leaving the loss as already stated. The price of tin is about 3*l.* 15*s.* per ton less than at the previous account, making a difference of over 200*l.* against the mine.

A vote of thanks to the committee for their continued gratuitous services terminated the proceedings.

#### BOTALLACK MINE, ST. JUST.

The quarterly meeting was held at the mine on Wednesday.—Mr. S. H. JAMES (the purser) in the chair. The accounts for the three months ending March showed:—Debits: Wages, 3760*l.* 16*s.* 9*d.*; coals, 782*l.* 3*s.* 6*d.*; carriage, 275*l.*; rents, 50*l.*; interest and commission, 50*l.*; Stannaries assessment, 4*l.* 11*s.* 2*d.*; merchants' bills, 859*l.* 5*s.* 3*d.*; total costs, 5782*l.* 2*s.* 9*d.*. Credits: Copper, 147 tons (less dues), 1314*l.* 2*s.* 11*d.*; tin ores, Botallack, 64½ tons (less dues), 3307*l.* 5*s.* 2*d.*; Carnyorth, 36½ tons (less dues), 1782*l.* 2*s.* 6*d.*; total, 6303*l.* 10*s.* 7*d.*.—Arsenic, 19*l.* 1*s.*; sundries, 62*l.* 12*s.* 6*d.*; total credits, 6385*l.* 4*s.* 1*d.*. Deducting the above costs therefrom will leave a surplus profit on the three months' working of 603*l.* 1*s.* 4*d.*. The debit balance from the last account was 1657*l.* 0*s.* 11*d.*, and deducting the above profit leaves now 1053*l.* 18*s.* 9*d.* to be carried forward to next account. It was resolved unanimously that the above accounts be allowed and paid, and that the minutes of the committee be confirmed and approved—that portions of Parknoweth and Wheel Looz sets be worked by, and adjoined to, Botallack, and that Wheel Looz adventures be paid 300*l.* in settlement of the same. The highest price received for tin during this quarter's account is 66*l.* 10*s.* per ton, but present rates for same quality (as sold May 15) is 54*l.* per ton. The agent's report submitted at the quarterly meeting stated that in the Higher Mine the 205 north is productive, also a winze sinking under this level is opening paying ground. At Day's shaft, now sinking under the 190, the lode is large and tiny. The 170 and 190 south are driving and opening tin ground. The 130 east, on Wheel Looz, is extending in good tribute ground. The winze sinking below the 100, at Wheel Hazard, is yielding tin and copper. At next setting it is intended to resume the driving of the 180 and 150 east, on Wheel Looz. At Wheel Cock the new shaft is now cut down under the 112; this level is driving, and productive for both tin and copper. The same level east is in payable ground. A rise over the 100 west is in good copper ground. The 100 south will pay well for copper. The 85 east, on the Tolven, has greatly improved; the lode is 18*f.* wide, composed of arsenical pyrites, and is also yielding good returns of copper, tin, and arsenic. At Carnyorth the skip-road at Pearce's shaft is complete to the 135. In the 115 west the lode is large, and producing tin. The 64 and 42 west, on the new lode, are both opening paying tin ground. Rodd's shaft is sinking under the 30 in good tin ground; also the 40, east and west on Rodd's lode, is in paying ground; likewise the 30 west will work at a good profit. Ground opened in three months on shafts, winzes, and ends 105 fathoms. There are now employed 88 men and 27 men opening ground, and 129 men and 25 boys stopping ground on tut and on tribute. New kilns and dues are now being erected in order to burn arsenical pyrites, and it is hoped that considerable returns will shortly be made from this source. There has been charged in this account 150*l.* which has been expended in the new calcining works. There are now employed at Botallack between 400 and 450 persons, and there are now 10 steam-engines working.

After the auditing of the accounts the shareholders sat down to an excellent dinner, presided over by the purser. After the usual loyal toasts were disposed of, Mr. FRANCIS BOASE, J.P., of Penzance, proposed in highly laudatory terms the health of the Chairman, Mr. James, and congratulated him on the greatly improved position of Botallack, and how altered its position is compared with two years ago, a time when there was a severe depression in the tin market. Mr. James, in reply, said that he was most grateful to Mr. Boase for his kind words, and for his kind wishes for the future of the mine, and that he was most confident as to its permanent position and prospects; it was also a most valuable source of employment to the district. (Hear, hear.) He was glad to hear so good an account of the Wheel Cock part, where a considerable expenditure had been made, and which outlay had been severely criticised and found fault with by some parties, but he believed now they would reap handsome returns for their outlay. He (Mr. Boase) would refer to the indefatigable exertions displayed by Mr. James in promoting and watching over the interests of the adventurers through their severe period of distress and depression, especially the past two years, and he had created in order to burn arsenical pyrites, and it was hoped that considerable returns will shortly be made from this source. There has been charged in this account 150*l.* which has been expended in the new calcining works. There are now employed at Botallack between 400 and 450 persons, and there are now 10 steam-engines working.

Mr. JAMES suitably responded, and made some most interesting observations on the mine and its progress, which he had great pleasure in being enabled to report so very favourably of. They had recently been taking in their employ an increased number of men, and they had now plenty of room for a great many more. (Hear, hear.) Capt. F. BENNETTS gave some valuable information on the prospects of the mine, and said they had met with good luck in their explorations for some months past, and he was glad to say that they had been able to considerably reduce their debt balance. (Hear, hear.) They had now some excellent points in view, especially at Wheel Cock, where they anticipated most satisfactory results.

Captain HALLS also gave an outline of the great resources of Botallack, and the enormous field presented them for discoveries throughout the sett, which he considered was quite inexhaustible in its stores of tin and copper.

The CHAIRMAN proposed in the most courteous terms "The Health of the Visitors" who were present, especially Mr. Thomas Field, who was so extensively interested in mining, particularly in tin smelting.

Mr. FIELD, in reply said he was highly gratified to be present to-day, and find Botallack doing so well. From all he could learn, he should consider the position of this mine had immensely improved during the past year. He believed that their present returns of tin and copper would soon have a great increase to them by the anticipated production of arsenic, of which Botallack sett promised a great yield. (Hear, hear.) Respecting the tin market, he would observe in the varied resources of the world that 6000 tons of metal tin were sent out last year from Australia, and he believed there would not be less in the present year. He did think there was but very little falling off this year in the Cornish production of tin. It was a fact that the present rates for tin over 20 years ago would have been considered as ample value to producers, but now the cost of working mines, and the high rates we have been paying for coals, iron, and labour, made an enormous difference in costs to the tinners. He thought 70*l.* per ton was quite high enough for Cornwall, and he did not wish at any time to see it higher, as high rates so stimulated production throughout the world. (Hear, hear.)

Mr. J. G. URBAN was next called on by the Chairman, and in reply made a most able speech on many interesting events in the West, observing how he had met the adventures of Botallack at divers times through their periods of prosperity as well as adversity, and referred to the great variations of the tin market. He believed that before long would come back to original prices, which would vastly reduce the costs of working Cornish mines. He fully endorsed the views expressed by Mr. Field on the tin market, and how a few years ago, when the tin-producing districts of the world were confined to Billiton, Banca, and Straits settlements, merchants and smelters could greatly command the market. He knew Cornish smelters had often been abused for lowering the prices in the market as they wished, but he was sure the whole state of affairs now was quite changed. He heartily congratulated the Chairman and the shareholders on the satisfactory position of Botallack and its excellent prospects. As far as tin is concerned, he did not

think it at all desirable that it should go up to inflated prices; this only tended to excite immense production in distant countries. He believed that great quantities of the tin now brought from Australia was not sold at a profit, but much of it was sold at a loss. It was very surprising, as Mr. Field observed, how the tin raised in Cornwall did not exhibit a great falling off. In reference to his official position in the electric telegraph department, it was wonderful how the vast telegraph system over the world had affected the markets for tin and all metals; it was perfectly marvellous, in fact, to see how it equalised value, as every day the rates are known even in the most remote districts of the globe.

#### STANDHILL LEAD MINING COMPANY.

A general meeting of shareholders was held at the company's offices, Derby, on April 24.—Mr. L. LOVICK in the chair.

Mr. H. W. EVANS (the secretary) read the notice convening the meeting, the object of which was to receive the council and manager's reports for the past year, and to pass the accounts, elect officers, &c. Also to decide what should be done with the amount realised by the last sale of lead ore. The subjoined reports were submitted:—

The executive council reported that the Standhill sett has been proved from the old workings to a depth of about 12 fms., and a quantity of lead ore has been taken out and sold. But as this method of working would not pay, and has only been used as a trial of the ground, the council are now decided to drive an adit direct into the veins, in order to cut them in the deepest point possible; likewise to obtain water-power to supersede manual labour in the dressing process; also by the method of adit working the expense of bringing the stuff out is diminished 70 per cent., and the output vastly increased. The length of the adit now cut is 240*f.*, and the council have ordered tram rails and the ironwork for the wagon, a crusher, self-acting sifter, and a water-wheel be at once provided, as there is a considerable quantity of lead ore now ready for dressing, and more is being brought to bank every day; therefore, unless some quicker method of dressing be provided the miners will—as soon as the tramway is laid—be choked up with the mineral, and will have to stop cutting the vein to clear and dress up the stuff out of their way. The council regret the very unsatisfactory manner in which some of their responded to calls; unless these are speedily paid-up defaulting adventurers will bring to the mineral laws of the Wapentake.

Capt. Thomas Briddon reported that the Standhill sett has been explored, and the veins proved to the depth of 12 fms. from the old works. The adit has been cut 240*f.*, part being blasted through the solid dunstone rock; 60*f.* of the Standhill vein have been laid bare, which has produced a large quantity of lead ore. Five lead-bearing veins have been crossed during the cutting of the adit. They have now 120*f.* of cover, and the further they drive the stronger and richer is their lead ore. They have not yet come to the crossing of the Rake vein, but as soon as their tramway is laid they will be able to report that desirable fact, and shall then be able to find employment for from 15 to 20 men and boys in getting and dressing the ore. He suggests the urgent necessity of providing some more efficient dressing apparatus, to be driven by the water-power on the mine, thus superseding, to a great extent, manual labour, and greatly increasing the quantity for sale. The new coe is also completed. He congratulates them on the present and future prospects of the Standhill Mine.

Several questions were asked and replied to, to the satisfaction of the shareholders, and a dividend of 7 per cent. was declared.

A vote of thanks to the Chairman and retiring officers terminated the proceedings.

#### CARN BREA MINING COMPANY.

The quarterly meeting of adventurers was held at the mine, on Wednesday, Capt. W. TEAGUE in the chair.

The notice convening the meeting was read, and the report of the agents submitted, stating that if tin had kept up to its former price good dividends would now have been declared. The future prospects of the mine are very encouraging.

The CHAIRMAN remarked that at the last meeting they spoke of a decided improvement in the eastern part of the mine, and that was followed up by a collapse in the shaft, to which reference was also made at the same meeting. It was thought that they would have been able to overcome that before now, but he believed it would take them another three months before they should get the shaft in thorough working order. They also intended to fix a new skip-road, and they had opened upon a good lode. They had been working the ends during the three months, and the whole of the stuff was left underground, so that when the shaft went down it would be available for drawing. But for the mishap they would have shown a much better credit that day. Their copper ore sales had amounted to 884*l.* 8*s.* 7*d.*; arsenic, 243*l.* 16*s.* 6*d.*; and the extra carriage of tin, 28*l.* 13*s.* 11*d.*. The loss on the quarter's working was 757*l.* 11*s.*, but there would have been a profit of about 1200*l.* if the extra month's cost had not been charged. Mr. THORNE suggested that the thirteenth month's cost should be proportioned at every three monthly meeting. It was better to do that than have such a heavy item hanging over their heads all the year round.

Capt. TEAGUE said he saw no objection to the suggestion being carried out if it was the wish of the adventurers. When they first adopted the present mode of charging in the extra month's cost it was thought that 2000*l.* would not be much to overcome, but now it was more than they could cope with as an extra item.

The suggestion of Mr. Thorne was made a substantial proposition, and carried unanimously.

The CHAIRMAN then stated that the loss on the quarter had reduced their credit balance to 4305*l.* 9*s.* 6*d.*. He was very sorry for it, but he could assure them that the agents had done their very best. Two hundred tons of tin every three months was a very large quantity to produce, but he believed it could be maintained in the future.

Mr. A. HINGSTON, in proposing a vote of thanks to Captain Teague, remarked that whether things would improve he was not in a position to say. There was a great mystery surrounding the tin resources of Australia; but whatever their views might be upon this point, they must be fully persuaded that in Tincroft and Carn Brea the agents did their very best for the interests of the adventurers, and he therefore proposed their best thanks to Captain Teague and the other agents.

Captain TEAGUE, in acknowledging the compliment, said nothing would be wanting either on his part or that of the other agents to bring back the mine into a successful position. If there was anything in the mine at all they would do their best to bring it to surface. It was very gratifying to him to know that they had done so well, seeing the miserable prices for tin that they had to contend with. Not a great while ago tin was 40*l.* a ton above the price now paid; but if they could only get 20*l.* a ton more both mines would now be paying handsome dividends. The fact was not to be gainsaid that even now Tincroft and Carn Brea could live as well as any other mines in the district, and, while some were compelled from various circumstances to close, those that had not known the depression must hereafter reap the benefit of it. Bad as things were he did not at all despair. They had outlived worst times before now, and he believed they should do so again.

#### TINCROFT MINING COMPANY.

The quarterly meeting of shareholders was held at the mine, on Wednesday, Capt. W. TEAGUE in the chair.

The notice convening the meeting and the statement of accounts—showing a profit on the 15 weeks' working of 1450*l.* 16*s.* 10*d.*, increasing the credit balance to 1594*l.* 13*s.* 6*d.*—having been read, a satisfactory report from the agents was submitted, the two chief points being the Downright shaft, sinking under the 246, which is worth 40*l.* per fathom, and the winze sinking under the 284, 10 fms. west of the 246, where the lode is worth fully 100*l.* per fathom. The returns for the past quarter show that the mine still continues to look well.

The report and accounts having been passed, it was resolved, on the motion of Capt. Teague, that a dividend of 5*s.* per share should be declared, the balance of 94*l.* 13*s.* 6*d.* being carried forward to the credit of next account.

Capt. TEAGUE remarked that it was a very sad thing the price of tin was so low, that after selling close upon 200 tons of tin they should make so small a profit. He added that if the extra month's costs had not been charged there would have been a profit shown of about 370*l.* They must hope for better days, but when those better days would come he was sure he did not know.

Capt. JAMES pointed out that this was a fifteen-week instead of a three-monthly meeting.

Capt. TEAGUE said he was quite aware of it, but it was no good for him to attempt to take the control of that or any other mine unless he had a little latitude. He did not think that he ever made any promise that he did not fulfil, or that the adventurers could cast a reflection upon a single thing that he had done. The profit shown upon the accounts that day was as fairly made as any profit ever was, and in spite of present circumstances he was pleased to say that their position was a very healthy one. Up to the present time only one-half of the new stamps that were put up had been at work, but during the coming quarter they would all be worked, and this would come to their assistance a little. He was glad to have the opportunity of giving this explanation, because it mainly accounted for the latitude which he had taken. That he was not likely to do anything radically wrong as shown by the holding he had in the mine.

Mr. TARGLOW enquired what was his interest present held?—Capt. TEAGUE said that he held 2241 shares.

Mr. RULE asked what quantity of coal was burnt on the mine, and what price was paid for it?—Capt. TEAGUE replied that they burnt between 300 and 400 tons a month, and that it cost them 17*s.* 3*d.* per ton delivered on the mine. He added that one of the advantages they now had was that they were able to mix superior and inferior coals together, and they found it to answer admirably.

FRANK MILLS.—In their quarterly report to the adventurers, Captains J. Nicholls, James Rowe, jun., and N. Adams state that during the three months they have cleared and secured the 60 north 30 fathoms, and are now rising in back; lode worth 5 *cwt.* of lead ore per fathom; they will continue this rise to the 45, and communicate with Exmouth Mine for ventilation. The 72 north is in congenial strata; in the 73 south they have laid open some profitable ground, now being worked on tribute. They have also productive ground in the 84 south; they have also opened productive ground. The 115 and 145 are progressing favourably. They have resumed sinking the engine shaft below the 145 by nine men, and expect to have the east lode in the shaft within 2 fathoms sinking, and at the 160 the west lode will be very near it. The improving strata, and junction of lodes, coupled with the very favourable indications in the bottom of 145, make them very sanguine that great discoveries will be made at the 160, and still greater at a deeper level. Owing to the falling off in the 115 slope they have not been able to increase the lead returns, as anticipated at the last meeting, but their future prospects for lead in the 72 north and in depth are very good. They are getting the levels and tramroads in good order, to be in a position to send off large quantities of iron immediately the railway is completed, and then it will be proved that this is a very valuable property. During the three months 367 fathoms of ground has been removed by driving, sinking, stopping, rising, &c. There are 128 persons employed in the mine.

[For remainder of Meetings see to-day's Journal.]



## FOREIGN MINING AND METALLURGY.

Large transactions have become more and more scarce in the French iron trade, although many sales are remarked. Proprietors of works not being able to produce indefinitely, and having great occasion to effect sales, are obliged to do business at scarcely remunerative rates. It is this circumstance which maintains French metallurgical industry in the precarious condition in which the exaggerated advance in coal plunged it some time since. The fall which has taken place in French metallurgical products appears to have attained such proportions that it has been carried to the last possible limits. If prices should fall a little further, the production of iron will be no longer practicable, and it will be necessary to close the works, and wait for better times. Merchants' iron has realised an average of 94. per ton at Paris, and large construction realised an average of 117. 8s. per ton. There has been a considerable amount of business doing at Lyons. The forges have few orders, but the foundries have been doing pretty well, and at the steelworks orders are far from making default. In the Champagne district charcoal-made pig for refining gives rise to no important transaction; second fusion pig has also been placed tolerably easily. There has been little demand for first and second class iron. Certain descriptions of coke-made iron have sold at 84. 4s. per ton. Sheets and axles have been in good request. The foundries are not very active, but there has been a certain amount of business passing in small castings. In the Longwy basin refining pig has been sustained at 24. 18s. per ton. Grey pig for second fusion has been quoted at 44. 8s. per ton for No. 1, and 37. 12s. per ton for No. 3. The French Minister of Marine has invited tenders for about 5000 tons of pig-iron.

In a report of the German Minister of Commerce, it is stated in connection with the Prussian mines and ironworks that there are 276 blast-furnaces, which worked on an average ten months and a half out of the last twelve. The average produce of each furnace is given at 6000 tons.

There have been comparatively small transactions in metals at Paris, and no material change has occurred in quotations. Chilean copper in bars, delivered at Havre, has made 87. per ton; ditto ordinary descriptions, 85. per ton; ditto in ingots, 88. per ton. English tough cake, 88. per ton; and pure Corocoro minerals, 88. per ton. The German copper markets have given rise to only a comparatively limited number of transactions. Upon the Paris tin market Banca, delivered at Havre or Paris, has made 94. per ton; ditto Straits, 88. per ton; and

English, delivered at Havre or Rouen, 90. per ton. At Marseilles tin has ruled feeble, and without demand. Upon the Rotterdam market tin has ruled quiet, and there have been no transactions of any importance to note. Prices have, however, been maintained, 50. per fl. having been paid for disposable Banca, and for Banca to be delivered at the approaching sale 50. per fl. Billiton has been held at Rotterdam at 47. per fl. The German tin markets have been generally feeble. The Paris lead market has shown firmness; French lead, delivered at Paris, has made 22. 8s. per ton; and Spanish, delivered at Havre, 22. per ton. The German lead markets have been firm, and without great variations as regards prices. A small advance has been established in zinc at Paris; Silesian, delivered at Havre, has made 25. per ton; other good marks, delivered at Havre, 24. 12s. per ton; and ditto at Paris, 24. 8s. per ton. At Marseilles rolled Vieille Montagne zinc has made 30. per ton. The German zinc markets have been very firm, but in consequence of the exigencies of holders transactions have been only limited.

The demand for coal has presented little animation at Brussels, and prices have shown no great firmness. The Belgian collieries continue to be visited by French agents, who exert some pressure by this means upon the collieries of the North of France. The extraction of coal is stated to be materially increasing in Russia, and Russia is expected to shortly meet her own coal requirements. The Grand Bordia Collieries Company commenced the payment on Thursday of a dividend for 1874, at the rate of 5. per share.

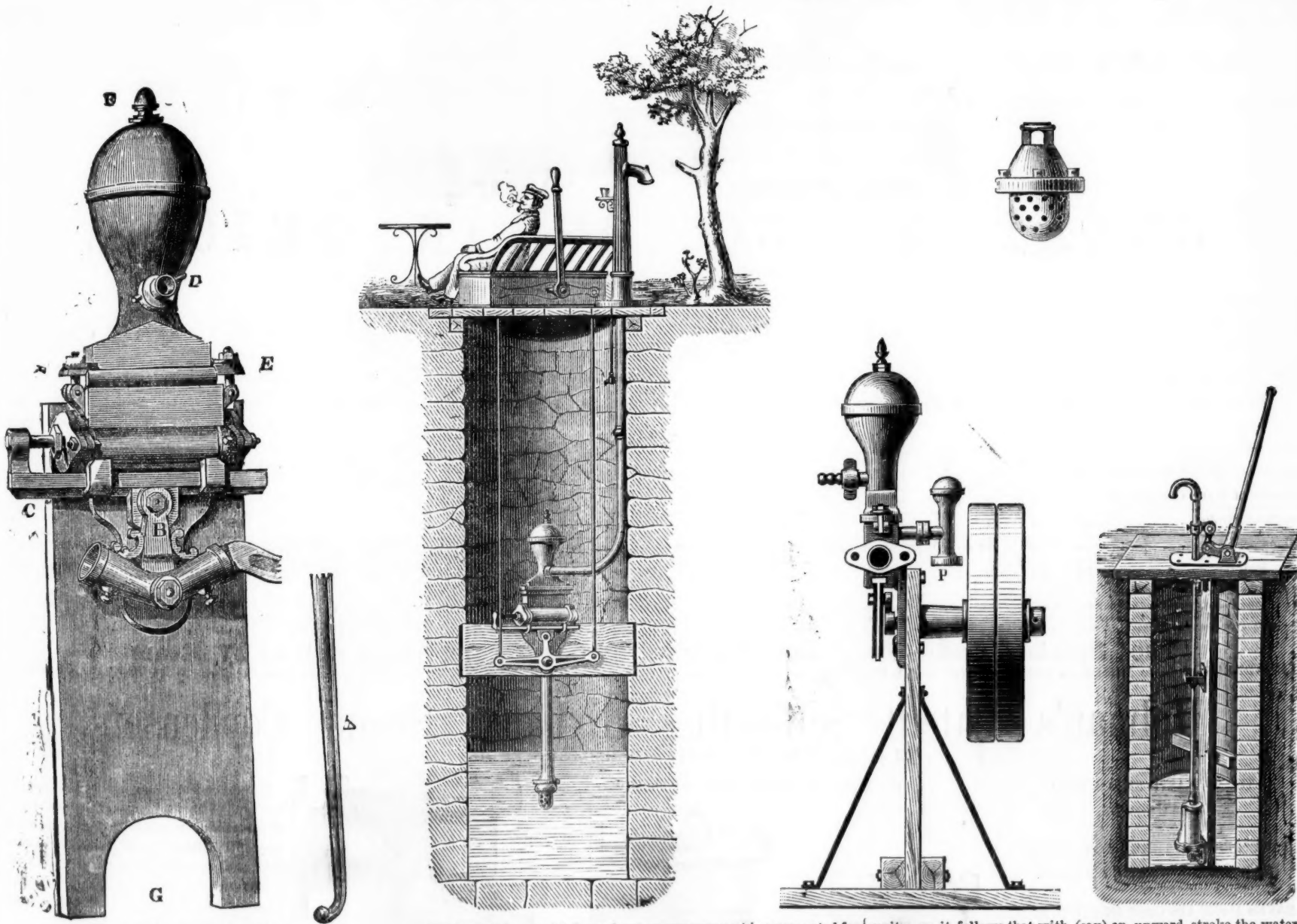
The French coal trade has remained quiet; transactions exhibit some heaviness, and are not very numerous. The political rumours which have prevailed of late, although they do not appear to repose upon any very reliable foundation, are not calculated to restore the confidence which is necessary for the full development of business. Metallurgical industry is not just now very prosperous in France, and we have also arrived at a period of the year which does not usually exhibit much animation. It is not, then, at all surprising, under these circumstances, that coal quotations should be stationary in France, and that they should even exhibit a slightly downward tendency. Coalowners accept offers of a certain importance if the prices proposed slightly exceed the cost of production; but the small consumer, whose requirements are pressing and urgent, is still obliged to submit to nominal quotations. The situation is expected, however, to shortly change, and we shall probably soon witness a decided fall. The annual meeting of the Northern of France Mineral Industry Society has just been held at Douai, under the presidency of M. Vuillemin, managing engineer of the Aruche Mines. A lengthened discussion took place on the use of coal-cutting machinery.

The intelligence received with respect to the Belgian iron trade is discouraging. In the Luxembourg pig has been selling at remarkably low rates. The orders for finished iron remain insignificant; some transactions of some little importance have offered themselves, and have provoked an inveterate competition. The Administration of the Belgian State lines has offered for competition a lot of 100 iron trucks; this is not much, having regard to the requirements of the Belgian construction establishments and the traffic exigencies of the State lines themselves. Still it is a good deal better than no orders at all. A metallurgical Congress, just held at St. Petersburg, under the presidency of the Grand Duke Constantine, appears to have passed off very successfully. In Germany metallurgical industry begins to devote some attention to the approaching removal of all import duties on iron and steel. Some of the industrialists of Westphalia and the Rhine have solicited indirectly a prolongation of the protective system. This movement appears likely to meet, however, with scant encouragement at the hands of Prince Bismarck.

Several horizontal coal beds have been found in the progress of the Geological Survey of Canada, on the North Saskatchewan river, between Edmonton and Rocky Mountain House. One bed was from 18 ft. to 20 ft., and favourable for working. The coal here is superior to that in the second Appelle Valley. The coal field is said to extend to the Athabasca river on the north, if not further, and Red Deer river on the south. The area is reckoned 25,000 square miles.

**MANX SILVER-LEAD MINING COMPANY (LATE OHIO).**—This company, it appears, has been formed for the purpose of acquiring and working that well-known mining property known as the Ohio, situate in the parishes of Braddan and Onchan, in this island, and being only about four miles distant from the town of Douglas, on an excellent road, and in a direct line and almost equidistant from the Great Laxey and Foxdale Mines, the most successful mines in the Isle of Man. This is of itself almost sufficient to warrant the belief that the enterprise will ere long yield large and handsome profits to the shareholders. The property has been obtained upon reasonable terms, seeing that an outlay of about 18,000. has already been made in opening out the mine. The shaft has been sunk to a depth of about 70 fms., and although by working the upper levels a sufficient quantity of ore might be raised to pay expenses, still the directors intend to sink the shaft at once to a deeper level, when it is fully anticipated by those competent to form an opinion that beneficial results will be attained. Besides which, since the late company ceased working two powerful and well-defined lodes have been discovered in the 70 fm. level, and as these lodes will form a junction in about 10 fathoms sinking it is advisable not to work the upper levels until this junction has been intersected. The mine has always been looked upon in this island as a first class property, and as the directors have had the mine inspected, not only by experienced mining captains, but also by two gentlemen, Fellows of the Geological Society, they have the greatest confidence in the ultimate success of the scheme. Capitalists will, therefore, find this a *bona fide* investment, and there is little doubt but that the shares in this company will soon rise to a premium.—*Isle of Man Times*.

## AMERICAN PUMPS.



AMERICAN PUMPS.

We illustrate this week two pumps of American design, the first of which is well known under the name of "Hansbrow's" or "California Pump," and the second under the title of "submerged pump."

The California pump, represented in various applications by our figures 1, 2, and 3 is a double-acting suction and forcing pump, and by means of the air-vessel may be used either as a fire-engine or garden-jet for dwelling-houses, or it may be employed for feeding elevated reservoirs. Our first figure shows this pump mounted on a wooden plank; A is the working handle, which is shown broken off in the illustration, and may be fitted either on the right or left hand side of the socket B. The latter works the horizontal slide C, which is connected with the piston of the pump-barrel, thus, by working the handle A, a to and fro motion is imparted to the slide C, consequently to the pump-piston. The piston-stroke is 5 in., and the working capacity of one of these pumps with a 5-in. barrel, is put down at 1300 gallons per hour of 35 double strokes. D is the water outlet, to which a tube or a hose pipe may be attached, according to requirements. Access to the four valves for repairing or cleansing purposes may be obtained by unscrewing the nuts E, E. Our second figure shows this pump fitted up in a well for raising

water, and in our third wood-cut an arrangement is represented for strap in place of hand driving by means of a fast and loose pulley, but the foregoing description will render these sufficiently clear to require further comment. Our fourth figure shows an enlarged view of the bottom valve.

Turning to the submerged pump, so called on account of its working entirely under water, it differs in many respects from the preceding construction, as may be partially seen on referring to our figure 5. In the first place, it is only a forcing-pump, since it is entirely surrounded by water, and lifting is not required. The pump is double-acting, and is shown fitted up in a well in our wood-cut. The ascension tube forms at the same time the working-rod, being attached to the hollow pump-piston-rod, which is cast in one piece with the piston. The piston-rod has no stuffing-boxes, passing merely through the barrel-cover. The pump-barrel being completely submerged, the head of water above it forms, as it were, the stuffing-box, but this height of water may not fall below 2 ft., in order that the efficacy of this pump may not be disturbed. The pump-barrel has two suction-valves, which correspond respectively with the space above and below the pump-piston. The latter is hollow, and is provided with two valves placed separately on the inner surfaces, so that when one is open the other is shut.

Now, as the hollow piston-rod communicates with the inner piston

cavity, so it follows that with (say) an upward stroke the water above the piston in the barrel becomes more and more compressed, and entering into the piston cavity cannot again escape for reason of the bottom piston valve being shut; but owing to the increasing compression, through the piston nearing the finish of its stroke, the water becomes necessarily forced up the piston-rod into the working rod. When the piston is in its downward movement the compression takes place in the bottom end of the barrel. The top of the ascension tube forms the outlet, and this working rod may be worked in the manner shown in the wood-cut. The piston-rod not having any stuffing-box, the water in the ascension-tube will empty itself by seeking its own level when the pump is not being worked, and will consequently prevent the pipe from bursting in cold temperatures through the water freezing. On the other hand, in the California pump the ascension-tube necessarily remains full, even when the pump is at rest. Our illustration shows a very simple way of attaching this pump in a well, by fixing it to a light scaffolding, so preventing the working-rod to vibrate, and causing it to work true.

In conclusion, we may remark that pumps on this system are also constructed to work out of water, but then are no longer submerged, and are less simple in arrangement, though equally efficacious.





PARIS EXHIBITION, 1867.



VIENNA EXHIBITION, 1873.



LONDON EXHIBITION, 1874.



CORNWALL POLYTECHNIC SOCIETY, 1867 and 1873.

# TANGYE BROTHERS AND HOLMAN,

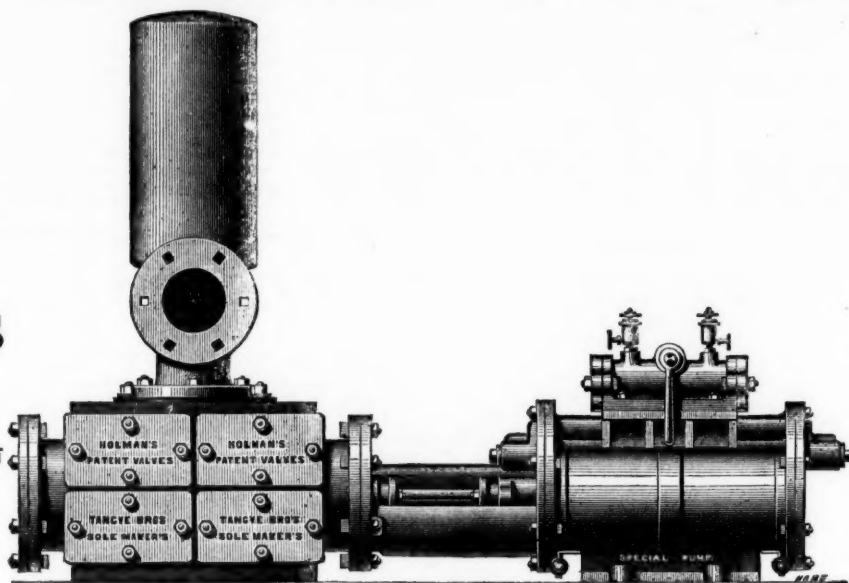
10, LAURENCE POUNTNEY LANE, LONDON, E.C.,  
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FOR

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OF

The "Special"  
STEAM PUMPS  
HAVE BEEN SOLD  
SINCE THEIR INTRODUCTION  
IN 1867.



200 SIZES

And combinations of

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STEAM PUMPS  
ARE NOW  
MADE FOR EVERY VARIETY  
OF PURPOSE.

## GREAT REDUCTION IN PRICES.

The following sizes are suitable for low and medium lifts:—

Diameter of Steam Cylinder ...In.	3	4	4	4	5	5	5	6	6	6	6	7	7	7	7	7	8	8	8	8	8	9	9	9	9	9	10	10
Diameter of Water Cylinder ...In.	1½	2	3	4	3	4	5	3	4	5	6	3	4	5	6	7	4	5	6	7	8	5	6	7	8	9	5	6
Length of Stroke .....In.	9	9	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	12	18	24	12	12
Gallons per hour .....	680	815	1830	3250	1830	3250	5070	1830	3250	5070	7330	1830	3250	5070	7330	9750	3250	5070	7330	9750	13,000	5070	7330	9750	13,000	16,519	5070	7330
Price .....	£ 16	18	20	25	22 10	27 10	32 10	25	30	35	40	30	35	40	45	50	40	45	50	55	65	50	55	60	70	85	55	60

CONTINUED.

Diameter of Steam Cylinder..In.	10	10	10	10	12	12	12	12	12	12	14	14	14	14	14	14	16	16	16	16	16	18	18	18	18	18	18
Diameter of Water Cylinder..In.	7	8	9	10	6	7	8	9	10	12	7	8	9	10	12	14	8	9	10	12	14	9	10	12	14	14	14
Length of Stroke .....In.	12	18	24	24	18	18	18	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Gallons per hour .....	9750	13,000	16,519	20,000	7330	9750	13,000	16,519	20,000	30,000	9750	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000	40,000	16,519	20,000	30,000	40,000	30,000	40,000
Price .....	£55	75	90	100	75	80	85	110	120	140	110	120	130	140	160	180	140	150	160	180	200	190	200	220	240	240	240

Intending purchasers of Steam Pumps would do well to observe the great length of stroke, short steam cylinder, and short piston of the "Special" Steam Pump, as compared with the short stroke, long steam cylinder, and long piston of the Pumps of other makers, as the efficiency and durability of the machine, and the space occupied by same, greatly depend upon this. The advantage of long strokes will be obvious when purchasers are reminded that each set of suction and delivery valves of a "Special" Steam Pump with 24 in. stroke, running at 120 ft. per minute, would open and close only 30 times per minute, as against 120 times per minute in a Pump with only 6 in. stroke performing same duty.

The "Special" Steam Pump can be worked by Compressed Air as well as by Steam.

HUNDREDS of these PUMPS are USED for HIGH LIFTS IN MINES, for which purpose they are made with 21, 24, 26, 28, 30, and 32-inch Steam Cylinders, and 36 48 and 72-inch Strokes.

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FOR ALL KINDS OF STEAM PUMPS AND HIGH-PRESSURE STEAM ENGINES.

Turns waste steam into  
GREAT POWER.

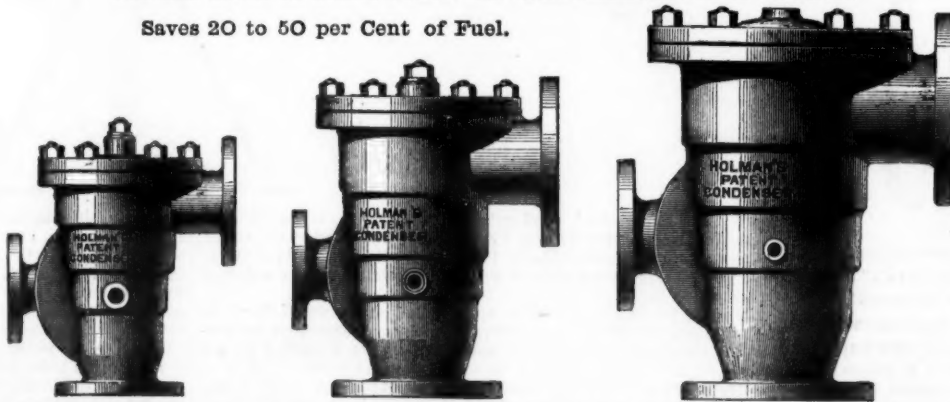
Saves 20 to 50 per Cent of Fuel.

REQUIRES NO THREE-WAY COCKS,  
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SAVES HALF ITS COST IN PIPES AND  
CONNECTIONS.

PREVENTS ALL ESCAPE OF STEAM IN  
MINES OR ELSEWHERE.

REQUIRES NO EXTRA SPACE.



These Condensers are made to suit any size and kind of Steam Pump. They form a part of the suction pipe of the Pump, and while they effectually condense the exhaust steam, they produce an average vacuum of 10 lbs. per square inch on the steam piston, increasing the duty of the Engine, and effecting a saving in fuel of from 20 to 50 per cent.

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MORLEY COLLIERY, WIGAN, October 16th, 1874.  
Messrs. TANGYE BROTHERS AND HOLMAN.

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ings. The perfect manner in which this important result is accomplished by your Condenser is extremely creditable to you, and merits the thanks and commendation of the Mining Engineer. When we start the "Special" Steam Pump the Condenser commences working automatically, and maintains a constant vacuum of 10½ lbs. per square inch, even when we run the Pump upwards of 80 strokes (106 feet) per minute. It may perhaps be interesting to you to know that when we were running the Pump at 84 strokes (108 feet) per minute, the steam gauge

indicating a steam pressure of 36 lbs. per square inch, 80 yards from the Pump, and the Condenser vacuum gauge on the exhaust pipe indicating a steady vacuum of 21½ inches, I turned the exhaust steam from the Condenser into the atmosphere, when the speed at once fell to 44 strokes per minute. The working economy thus shown is really so great that the cost of the Condenser must be saved in a very short time.  
(Signed) J. THOMPSON.

Price from 30s. to 40s. per inch diameter of Steam Cylinder, according to the relative Diameter of Pump for which Condenser is required.

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SOUTH WALES HOUSE

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TANGYE BROTHERS AND STEEL, Tredegar Place, NEWPORT, Mon.; and Oxford Buildings, SWANSEA.



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PARIS, 1867.

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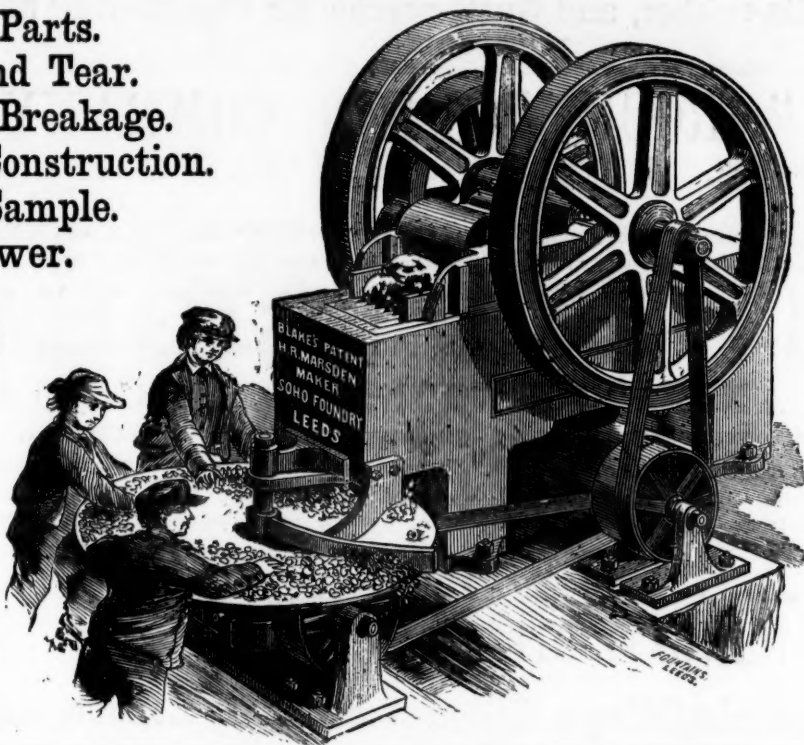
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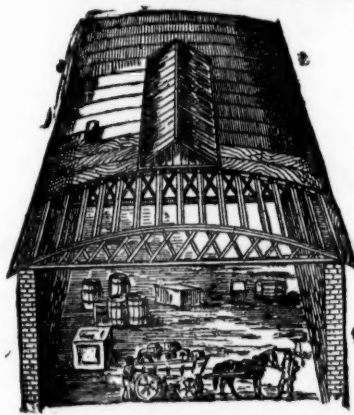
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